UNIVERSITY OF
ILLINOIS LIBRARY
AT URBANA-CHAMPAIGN
BOOKSTACKS

CENTRAL CIRCULATION BOOKSTACKS

The person charging this material is responsible for its renewal or its return to the library from which it was borrowed on or before the **Latest Date** stamped below. **You may be charged a minimum fee of $75.00 for each lost book.**

Theft, mutilation, and underlining of books are reasons for disciplinary action and may result in dismissal from the University.

TO RENEW CALL TELEPHONE CENTER, 333-8400

UNIVERSITY OF ILLINOIS LIBRARY AT URBANA-CHAMPAIGN

AUG 1 2 1998

SEP 1 5 1998

SEP 2 3 1998

When renewing by phone, write new due date below previous due date. L162

Digitized by the Internet Archive
in 2014

https://archive.org/details/saturdaymagazine1920unse

THE

SATURDAY MAGAZINE.

VOLUME THE NINETEENTH.

JULY TO

DECEMBER.

M.DCCC.XLI.

LONDON:
JOHN WILLIAM PARKER, WEST STRAND.

M DCCC.XLI.

052
SATU
v.19-20

INDEX

TO THE

NAMES AND SUBJECTS IN THE NINETEENTH VOLUME.

Addison, extracts from, 39, 72
Africa, vegetable butter of, 156
——— emigrants' first Sabbath in, 162
Agricultural Chemistry :—
I. On the interchange of crops, 6
II. On the interchange of crops, and on manures, 79
Aimé Martin, remark by, 56
Alison, extract from, 133
Alps after sunset, 133
American Indians, buffalo dance of the, 142
Anacharsis, the Scythian, 104
Ant, example of the, 190
Antioch and its vicinity, 113
Archipelago, the Grecian, and its mariners, 233
Armourer, Thomas Curson, the, 164
Art of deciphering effaced inscriptions on coins, 245
Assistance in resolving doubts, 198
Association of ideas, 178
Astronomy, 22
August, rural sports for, 71
Authority, dependence upon, 245
Authors, old scientific, study of, 16
——— perusal of fine, 190

Banks of the Thames, V., 25—VI., 65—VII., 97—VIII., 145—IX., 185—X., 201
Barbel, the, 93
Basil, 67
Beattie, extract from, 238
Bedawin, honesty of the, 91
Bee, man likened to the, 51
Beet-root Sugar :—
I. Varieties and cultivation of the beet, 23
II. Early modes of producing beet-root sugar from the beet, 31
III. Introduction of the manufacture into France, 55
IV. Present mode of preparation in France, 59
Beetles, oil and blistering, 27
Belief in supernatural assistance, 39
Benefits, material, of science, 30
Benevolent feelings, cultivation of, 37
Betel-chewers of the East, 77
Bible, the, 94
Bible and hour-glass, 93
Bicêtre, scene in the, 35
Binocular vision, 163, 189, 220
Birth-day lines, by Mrs. Hemans, 32
Blaze, Bishop, 70
Blessings, diffusion of, 91
Blight, 180
Blindness to our own faults, 77
Blistering beetle, the, 27
Book, silver, of the Gospels, 225
Books, 39, 72
Borage, 68
Bowles, lines by, 93
Brewster, extracts from, 110, 118, 140
Bronze, casting of statues in, 206
Brown, Dr. Thomas, extract from, 70
Brunelleschi, Memoir of, I., 144—II., 179
Buffalo dance of the American Indians, 142
Buffon, extract from, 32
Bulgaria and the Bulgarians, 73
Burke, remark by, 14
Burnett, extract from, 243
Burton, extract from, 200
Butter, vegetable, of Africa, 156

Camel, the, 102
——— and dromedary, 116
Cairo, Sketches of, I., 50—II., 89—III., 106—IV., 130
Canadian foliage, 182
Carlyle, extracts from, 102, 114
Carp, the, 39
Carr, extract from, 39
Cashmere Shawls :
I. The Goat of Cashmere and the native manufacture, 3
II. Attempts to introduce the Cashmere goat and the shawl manufacture into England, 13
Casting of statues in bronze, 206
Castle of Pevensey, 157
——— Warwick, 57
Chalmers, extracts from, 70, 80
Character of "Paradise Lost," 70
——— of Milton's writings, 96
——— judgment of, by children, 152
Charity schools, 195
Chemistry, Agricultural, 6, 79
Chervil, 230
Chess :—
XIII., XIV., XV., XVI., XVII., the Automaton Chess Player, 4, 21, 60, 75, 110
XVIII., XIX., On the Powers of the Pieces and Pawns, 115, 150
XX., Ancient games from which Chess is supposed to have been derived, 165
XXI. Origin of the powers of the pieces, 191
XXII., XXIII., The Knight's Move, 204, 228
XXIV. Chess without the Board, 243
Childhood, prayer in, 181
Children of one great Father, 174
——— as judges of character, 152
China :—
XII. Island of Chusan; military occupation: houses and offices of the Chinese, 109
XIII. Island of Chusan; appearance of the country; respect for the dead; Joss houses; Budhists; mandarins, 143
Chinese, their stationary character, 203
Christian minister, office of the, 62
Christianity, infidel testimonies in favour of, 32
Coins, effaced inscriptions on, 245
Coke, Sir Edward, 224
Coleridge, extracts from, 94, 119
Commerce of leeches, 133
Confederacy in virtue, 40
Confidence in the Divine protection, 39
Contemplation, pious, of the works of nature, 80
Copying of celebrated pictures, 187
Cottages of Switzerland, 137
Courts, splendour of, reproved, 35
Cowley, extract from, 187
Crabbe, extracts from, 37, 70, 78, 136
Creation, man its masterpiece, 156
Creator, testimony of the creature to the, 37
Credit and metallic currency, 203
Credulity and scepticism defined, 236
Croly, extract from, 93
Crops, on the interchange of, 6, 79
Crowe, extract from, 235
Cultivation of benevolent feelings, 37
Curson, Thomas, the armourer, 164

Dance of the American Indians, 142
Danger and distress, hymn for times of, 114
Dark and light mornings, 227
Davies, extracts from, 22, 24
Dead, the, 192
Dead swallow, 203
Death at sea, 56
——— sudden, 96
Death-bed fortitude, 238
December, rural sposts for, 247
Deep research, results of, 140
Dehon, extract from, 91
Deity, omnipotence of the, 51, 96
——— omnipresence of the, 112
Desert, uninvited guests in the, 183
De Tocqueville, extract from, 203
Diffusion of blessings, 91
Diminution of friction, 236
Dissolution of the earth, 196
Division of labour, 168
Dogs, sagacity of, 144
Doubts, assistance in resolving, 198
Dredging, 63
Dresden, account of, 161
Drinking of healths, 131
Dromedary and camel, 110
Drowning, self-preservation from, 37
Durham, extract from, 131
Duty, speculative acquaintance with the rules of, 166

Earth, dissolution of the, 196
East, betel-chewers of the, 77
Economy of marine life, 147
Education, ends of, 245
Egypt, stone quarries of, 182
Emigrants' first Sabbath in Africa, 162
Employment, 78
English Navigators, Old :—
I. Cabot, 10
II. Willoughby, Chancelor, and Burroughs, 199, 235
Entrance into the Tropics, 248
Eventide, 133
Evidences of revelation, 226
Example of the ant, 190

Fables of the ancients, 226
Faith, 119
Fame, 12
Fate of Jezebel, 102
Father Long Legs, 151
Faults, 114
——— blindness to our own, 77
Fearless contemplation of the future, 166
"Fifteen Years ago," 164
Fine Arts, a Brief History of the, I., 41—II., 122—III., 210
First landing in the Western Ind, 184
Floating islands, 241
Florence, Cathedral of S. Maria del Fiore, I., 148—II., 179
Foliage, Canadian, 182
Force and motion, 200
Forbes, extract from, 153
Forster, remark by, 100
Fortitude, death-bed, 238
Fresh-water Fish :—
VI. The Carp, 39
VII. The Barbel, 93
VIII. The Tench, 132
IX. The Gudgeon, 184
Friction, means of diminishing, 237
Friendship, worldly, 156
Fruits of Singapore, 116
Fuegians, account of the, 134
Fuller, extracts from, 55, 164, 227
Future, fearless contemplation of the, 166
Futurity and the present life, 226

Gainsborough and his Works, I., 178—II., 218
Gainsborough's picture of *The Pigs*, 179
Garden Herbs :—
Basil—Borage, 67
Hyssop, 223
Tansey, 230
Gardening, 72
Gauze, wire, 68
Goat, Cashmere, the, 3, 13
God our only hope, 30
Godliness, power of, real, 32
Good manners defined, 55
——— missionary, the, 91
Gospel, the silver book of the, 225
Gratitude, 75
Grey, Lady Jane, translation of lines by, 70
Gudgeon, the, 184
Gurney, extracts, from, 184, 248

Halford, Sir H., remark by, 166
Hall, Capt. Basil, extracts from, 133, 196
——— Robert, extracts from, 166, 190, 203
Hamilton, remark by, 37
Hankinson, lines by, 246
Hasting to be rich, 37
Hawk-moth, the, 101
Healths, drinking of, 131
Heart of man, 206
Heber, Bishop, extract from, 114
Hemans, Mrs., poems by, 12, 32
Honesty of the Bedawin, 91
Honey-dew, 195
Hooker, extract from, 78
Hope, 18
——— God our only, 30
Horeb and Sinai, mounts, 96
Horne, Bishop, extracts from, 51, 156
Horse, Russian's kindness to his, 140
Houses of all Nations, II., 196—III., 249
Human body a world in miniature, 32
——— life likened to the growth of a plant, 94
Hymns, 24, 114
Hyssop, 223

Ideas, association of, 178
Idle objections to established truths, 226
"I have lost a day," 140
Ind, Western, first landing in, 184
Illusions, Optical, IV., 52—V., 95—VI., 141—VII., 163—VIII., 189—IX., 220
Imposture and superstition, 153
India, a steam voyage to, 82
Infidel testimonies in favour of Christianity, 32
Influence of pure religion, 203
Inscriptions on coins, 245
Interchange of crops, 6, 79
Islands, floating, 249

Jesse, extracts from, 144
Jezebel, fate of, 102
Jocelyn, Lord, extracts from his work on China, 109, 143, 221
Johnson, Dr., extracts from, 56, 80, 190, 198, 226, 245
Judicious quotations, value of, 100
July, rural sports for, 119

Kaimes, Lord, extract from, 72
Kindness of the Russian peasant for his horse, 140
King, Capt., his account of the Fuegians, 134
Knight's move at Chess, 204, 220
Knowledge, 248
Knox, extract from, 51

Labyrinths, 53
Landing, first, in the Western Ind, 184
Last look, the, 243
Learning, 14
Leeches, commerce of, 133
Library, the, 200
——— lines on his, by Dr. Southey, 198
Light and dark mornings, 227
Literature, sacred, 230
Lloyd, extract from, 224
Long-legs, father, 151
Luxury, 94
——— progress of, 70

Mackintosh, extracts from, 55
Maintenance of truth, 243
Man, the heart of, 206
——— likened to the bee, 51
——— the masterpiece of creation, 156
Manchoo Tartary, 221
Manna, 93
Manners, good, defined, 55
Manures, on, 79
Maps and Mapping, I., 103—II., 107—III., 116
Marcus Antoninus, remarks by, 39, 93
Marine life, economy of, 147
Mariners of the Grecian Archipelago, 233
Married life, 243
Material benefits of science, 30
Maxim of Marcus Antoninus, 39
Mecca and its inhabitants, account of, 152
Mechanical processes of sculpture, 238
Medina, account of the city of, 197
Melancholy, 70
Melancthon, remark by, 243
Memoir of the late Dr. Thomas Young, I., 139—II., 159
Metallic currency and credit, 203
Milton, writings of, characterised, 96
Minister, officer of the Christian, 72
Montgomery, J., extract from, 192
Montgomery, R., extract from, 96
Months, Rural Sports for the :—
VII. July, 29
VIII. August, 70
IX. September, 119
X. October, 167
XI. November, 207
XII. December, 247
Moralities of life, their mutual dependence, 80
Mornings, light and dark, 227
Moth, the hawk, 101
Mouth organ, or Pandean pipes, 7
Mountain of Sepulchres in Persia, 193
Mounts Horeb and Sinai, application of the names, 96
Motion and force, 200
Mudie, extract from, 147
Murillo and his Works, I., 2—II., 18
Museum, visit to a, 219

Nakshi Roustam, or the Mountain of Sepulchres, 193
Nations, Houses of all, II., 169—III. 249
Nature, pious contemplation of the works of, 80
——— study of, 32
Negligence, 80
Northampton, Lady, lines by, 55
November, rural sports for, 207
Nuremberg, 9

Objections, idle, to established truths, 226
October, rural sports for, 167
Office of the Christian minister, 72
——— of woman, 20
Oil beetle, the, 27

854548

Old English Navigators :—
I. Cabot, 10
II. Willoughby, Chancelor, and Burroughs, 199
Omnipotence of the Deity, 51, 96
Omnipresence of the Deity, 112
Opie, Mrs. extracts from, 112
Opinions, popular, 245
——— preconceived, 236
Optical Illusions, IV., 52—V., 95—VI., 141—VII., 163—VIII., 189—IX., 220
Organ, mouth, the, 7
Ouzel, the water, 231

Panimpsests, 238
Pandean pipes, or mouth organ, 7
Pantograph, the, description of, 70
Paradise, common imagination of, 15
——— Lost, character of, 70
Paris, Dr., extract from, 236
Patagonians, account of the, 99
Patience, 51
Pawns, at Chess, powers of the, 115
Peace, 75
Peg-top, philosophy of a, 19
Perdidi Diem, 140
Permanence of books, 39
Persia, Mountain of Sepulchres in, 193
Perusal of fine authors, 190
Pevensey Castle, 157
Philosophy of a peg top, 19
Pictures, copying of celebrated, 187
Pieces and pawns, at Chess, powers of, 115, 150
Pipes, Pandean, or mouth organ, 7
Plant, human life likened to the growth of a, 94
Pope, probable origin of the doctrine of the supremacy of the, 61
Porteus, Bishop, extracts from, 39, 91
Potter, extract from, 246
Power of real godliness, 32
Powers of pieces and pawns at Chess, 115, 150
Praise, voice of, 238
Prayer in childhood, 181
Preconceived opinions, 236
Present life and futurity, 226
Pringle, extracts from, 91, 162
Processes, mechanical, of sculpture, 238
Profanity, 238
Progress of luxury, 70
Projection, confidence in the Divine, 39
Providence, blessings of, 39
——— reliance on, 68
Pure religion, influence of, 203

Quarries of Egypt, 182
Quotations, value of judicious, 100

Raffles, extract from, 243
Reliance on Providence, 68
Relief, voluntary, of poverty, 227
Religion, influence of pure, 203
Results of deep research, 140
Resurrection, the, 91
Revelation, evidences of, 226
Rich, hasting to be, 37
Richardson, extract from, 70
Robinson, extracts from, 91, 93, 96, 102, 116, 183
Roscoe, extract from, 238
Rural Sports for the Months :—
VII. July, 29
VIII. August, 71
IX. September, 119
X. October, 167
XI. November, 207
XII. December, 247
Russian peasant's kindness to his horse, 140

Sabbath, emigrants' first, in Africa, 162
Sacred literature, 231
Sagacity of dogs, 144
Saxony, Dresden, in, 161
Scene in the Bicêtre, 35
Scepticism and credulity defined, 226
Science, material benefits of, 30
——— use of speculations in, 118
Scientific authors, study of old, 16
Scorpion, the water, 112
Scrope, extracts from, 118, 203
Scythian, Anacharsis, the, 104
Sea, death at, 56
Secker, extracts from, 77
Self-knowledge, 93
Self-preservation from drowning, 37
September, rural sports for, 119
Shawls, Cashmere, 3, 13
Sherlock, extract from, 245
Shooting stars, 222
Siege-pieces, 92
Silver Book of the Gospels, 225
Sinai and Horeb, application of the names, 96
Singapore, fruits of, 116
Sketches of Cairo, I, 50—II., 89—III., 106—IV., 130
Solitude, 55
Soul and body, union between, 245
Southey, extracts from, 75, 147
Speculations in science, their use, 118
Splendour of courts reproved, 35
Stars, shooting, 222
Statues, casting of bronze, 206
Steam voyage to India, 81
Stone, transport of large masses of, 187
Stone quarries of Egypt, 182
Strong, extract from, 37
Study of nature, 32
——— old scientific authors, 16
Sudden death, 96
Sugar, Beet-root, 23, 31, 55, 59
Supernatural assistance, belief in, 39
Superstition and imposture, 153
Supremacy of the Pope, probable origin of the doctrine, 61
Swallow, the dead, 203
Swimming, 37
Switzerland, cottages of, 137
Sympathy, 246

Talent, true use of, 24
Tansey, 230
Tartary, Manchoo, 221
Taylor, Jeremy, extract from, 206
Teignmouth, Lord, extract from, 226
Tench, the, 132
Testimony of the creature to the Creator, 37
Testimonies, infidel, in favour of Christianity, 32
Thames, Banks of the, V., 25—VI., 65, VII., 97—VIII., 145—IX., 185—X., 201
Thoughts, 102
Thyer, extracts from, 96
Tottie, extract from, 94
Transport of large masses of stone, 187
Triumph, ultimate, of truth, 116
Tropics, entrance into the, 248
True use of talent, 24
——— knowledge, 248
——— wisdom, 243
Truth, ultimate triumph of, 110
——— weight of, 78
Turkey and the Turkish Provinces :—
VI. Wallachia and the Wallachians, 33
VII. Bulgaria and the Bulgarians, 73
VIII. Antioch and its vicinity, 113
IX. Mecca and its inhabitants, 153
X. Medina, 197
XI. The Archipelago and its mariners, 233

Uninvited guests in the desert, 183
Union between soul and body, 245

Value of words, 75
——— judicious quotations, 100
Vegetable butter of Africa, 156
Vice and virtue due appreciation of, 39
Vision, binocular, 163, 189, 220
Visit to a museum, 219
Voice of praise, 238
Voluntary relief of poverty, 227
Voyage, steam, to India, 81

Wallachia and the Wallachians, 33
War, 235
Warwick castle, 57
Watchmaking, 168
Water scorpion, the, 112
Weight of truth, 78
Western Ind, a first landing in the, 134
What is blight? 180
——— honey-dew? 195
——— knowledge? 248
Whewell, extract from, 248
Wilcox extract from, 51
Wire-gauze, 68
Woman, office of, 20
Words, value of, 75
Worldly friendship, 136

Young, Dr. Thomas, Memoir of, I. 139—II., 159

INDEX TO THE ENGRAVINGS.

Ancient games, figures representing, 165
Antioch, in Syria, 113
Antique head in the British Museum, 125
Aphis Rosæ, 180
Apparatus for diminishing friction, 237
Arabia, Mecca, in, 153
——— Medina, in, 197
Arqua, Petrarch's house at, 176
Automaton Chess-player, 4, 5, 21, 60, 76, 77

Barbel, the, 93
Bearded Bacchus, terminal head of the, 128
Beetles, 28
Beyn-el-Kasreyn, in Cairo, 105
Blighted branch, a, 196
Blistering beetle, 28
Boulac, landing place at, 81
Bridge at Hampton, 97
Britain, Roman coin for, 245
Bulgaria, ruined caravanserai at Hafsa, in, 73

Cairo, views in :—
Beyn-el-Kasreyn, 105
Khan el-Khaleelee, 129
Landing-place at Boulac, 81
Street scene, 49
Turkish effendee writing a memorial, 89
Caravanserai, at Hafsa, 73
Carp, the, 40
Cashmere goats, 13
Castle of Nuremberg, 9
——— Pevensey, 157
——— Warwick, 57
——— Windsor, 25
Cathedral of Florence, 149
Chess-player, automaton, 4, 5, 21, 60, 76, 77
Coin, Roman, for Britain, 245
Colossal Egyptian statue, 44
Colossus, removal of, by the ancient Egyptians, 183
Cottages in Switzerland, 137

Davy's safety lamp, 69
Diagrams of tops, 19, 20
Dredging machine, 64
Dresden, in Saxony, 161

Egyptian colossal statue, 44
English manor-house, 169
Etruscan patera, 45

Father Long-legs, 152
Figures representing ancient games 165
Floating Islands, Lake of the, 241
Florence, cathedral of, 149
Fortune, goddess of, 121
Friction, apparatus for diminishing, 237

Gainsborough, pictures by, 177, 217
Games, ancient, figures representing, 165
Goats, Cashmere, 13
Goddess of Fortune, 121
Grenada, in Spain, 173
Gudgeon, the, 184

Hafsa, ruined caravanserai, at, 73
Hampton bridge at, 97
——— court, 145
Harem, an Indian, 256
High Priest of the Magians, 194
House, interior of an Oriental, 249
——— old English manor, 169
——— of Petrarch, at Arqua, 176

Illusions, Optical, illustrations of, 53, 96, 141, 142, 163, 164, 189, 190
Illustrations of Map-making, 108, 109, 116, 117, 118
——— of the Knight's move at Chess, 204, 205
Indian harem, 256
——— mountain dwelling, 253
Italy, Petrarch's house at Arqua, in, 176

Khan-el-Khaleelee, Cairo, 129
Kingston-on-Thames, 185

Lake of the Floating Islands, 241
Lamp, Davy's safety, 69
Landing-place at Boulac, 81
Long-legs, Father, 152
Loom, wire-gauze, 68

Machine for spoon-dredging, 64
Magian high-priest, 194
Manor house, old English, 169
Map-making, illustrations of, 108, 109, 116, 117, 118
Market-cart, from a picture by Gainsborough, 217
Mecca, street in, 153
Milk-girl, from a picture by Gainsborough, 177
Moldavia, travelling post in, 33
Mountain of Sepulchres, in Persia, 193
Mouth-organ, or Pan's pipes, 8
Murillo, pictures, by, 1, 17

Nakshi-Roustam, or the Mountain of Sepulchres, 193
Nuremberg, castle of, 9

Oil beetle, 28
Old English manor house, 169
Optical Illusions, illustrations of, 53 96, 141, 142, 163, 164, 189, 190
Oriental house, interior of an, 249

Pan, terminal figure of, 41
Pan's pipes, 8
Pantograph, the, 15, 16
Partridges, 120
Patera, Etruscan, 45
Persia, Mountain of Sepulchres, in, 193
Petrarch's house at Arqua, 176
Pevensey Castle, 157
Phocion, statue of, 41
Phytolacca decandra, 224
Pointer and Setter, 29
Pompeii, Roman painting from, 209

Red Grouse, 72
Removal of a Colossus by the ancient Egyptians, 188
Richmond hill, view of the Thames from, 201
Roman coin for Britain, 245
——— painting, from Pompeii, 239
Ruined caravanserai at Hafsa, 73

Saxony, Dresden, in, 161
Scorpion, the water, 112
Setter and pointer, 29
Siege pieces, 92, 93
Snipe, the, 208
Spain, Grenada in, 173
Spanish Flower-girl, from Murillo, 1
——— Tinker, from Murillo, 17
Sphinx Nerium, 101
Spoon-dredging machine, 64
Staines' stone, 65,
Statue, colossal Egyptian, 44
——— of Phocion, 41
Street scene in Cairo, 49
——— in Mecca, 153
Suez, view of, 88
Swiss cottages, 137
Syria, Antioch, in, 113

Tench, the, 132
Terminal figure of Pan, 41
——— head of the bearded Bacchus 128
Thames, views on the banks of the, 2 65, 97, 145, 185, 201
Tinker, Spanish, from Murillo, 17
Tops, diagrams of, 19, 20
Travelling post in Moldavia and Wallachia, 33
Turkish effendee writing a memorial, 89

Victory, from a Roman painting found at Pompeii, 209

Wallachian post carriage, 33
Warwick Castle, 57
Water scorpion, the, 112
Windsor Castle, 25
Wire-gauze loom, 68

Zebu, the, 36

THE

Saturday Magazine.

No. 578. JULY 3RD, 1841. {PRICE ONE PENNY.

THE SPANISH FLOWER GIRL, FROM MURILLO.

MURILLO AND HIS WORKS. I.

IF it be true that painters portray themselves in their works, if their paintings exhibit their own genius, their propensities, affections, and the dispositions of their minds, the works of MURILLO bear a great analogy to his virtues, and the gentleness of his character. That a man of genius should be insensible to those allurements which so greatly affect vulgar minds ought not to excite surprise,—we ought rather to be surprised when a great mind displays the qualities of a mean and narrow capacity. Believing, as we do, in the purifying influence of intellectual exertion, it is cheering to point out the examples which so frequently occur of greatness united to goodness. These qualities ought ever to accompany each other and form the rule, the exceptions to which ought rather to be regarded as accidents insufficient to cast a slur upon the exertions of intellect. We have recently sketched the life of SALVATOR ROSA in which genius and frailty were strangely mingled—a life in which the misery resulting from the gratification of capricious passion was acutely felt. We have also been delighted in the contrast presented by the amiable and accomplished CANOVA, and we now propose to invite attention to the life and works of an artist whose conduct in both has earned for him the title of "the tender and the natural MURILLO."

Bartolomeo Esteban Murillo was born at Seville in 1618. He was descended from an ancient family, who had formerly held ample possessions in the province of Andalusia. Don Juan del Castillo a painter of some celebrity, was his uncle, and had established an academy at Seville which enjoyed considerable reputation.

In common with most persons who have attained eminence in any pursuit, Murillo gave very early indications of the natural bent of his genius. As a child he was constantly filling the margins of his school books, the walls, and whatever paper came into his hands, with drawings. It is not always that parents appreciate justly these promptings of nature, but in the present instance, the parents of Murillo fostered the genius of their child, taught him to read and write, and then took him to the gallery of his uncle Juan to be instructed in the painter's art. Castillo was in high estimation in Seville, being a good designer, although hard and unpleasing in his colouring. The boy was gentle and docile, and soon won the affection of his relative, who led him on slowly and surely in the principles of his art; nor did he leave his pupil ignorant of the mechanical departments—he made him mix his own colours—clean his own brushes—dispose his pallet, and prepare his canvass.

So well did Murillo profit by the instructions of Castillo that in a few years he exhausted all the acquirements of that master. He then painted two pictures, the one in the cloister of the Convent de Regina, representing the Virgin and San Francisco; and the other in another convent, the subject being Our Lady of Rosario with Santo Domingo. The manner of Castillo is discernible in both.

About this time Castillo removed to Cadiz, leaving Murillo without a master and without occupation. He was so poor that being one day in the kitchen of a convent, the cook said, "Murillo, you are so expert, pray do paint something for me." Murillo replied, "I have no canvass, and what is worse, have no money to buy any." The cook held his dish-cloth, Murillo took it and painted the head of Christ upon it, in a beautiful and finished style.

The poverty of our artist compelled him to seek the Feria* in order to paint whatever subjects were ordered of him. Here he continued for some time engaged in supplying wares to this market of Romish saints, and considerably improved his readiness to invent, to draw, and to dispose and arrange any given subject.

After spending a few years in this way, and in private study, a circumstance occurred which had great influence on the mind of Murillo. One of his fellow scholars, Pedro de Moya, influenced by a strong desire to travel in foreign countries, had abandoned the school of Castillo, and gone to Flanders as a private soldier, but happening to see many of the pictures of Vandyck, all his love for his former profession returned, and he was most anxious to become a pupil of that celebrated master. Moya accordingly went to London, where Vandyck resided, became his pupil, and soon succeeded in working in the style of his master; but his improvement was checked by the death of Vandyck, and Moya returned to Spain. Murillo saw, and was surprised at that chaste, and to him hitherto unknown manner, which Moya had acquired, and became anxious to visit Flanders or Italy, in order to obtain the same advantages. But his pecuniary means were very limited,—he was without friends and patrons,—men of greater name or pretension had hitherto stood between him and reputation. But he worked diligently for a short time, and produced several works, which he sold at the Feria, and, without communicating his intentions to any one, he quitted Seville for Italy in the twenty-fourth year of his age.

When Murillo arrived at Madrid he visited his countryman, Don Diego Velasquez de Silva, first painter of the camera to the King, with whom he was not acquainted except by fame, and requested of him letters of introduction to Rome. Velasquez, pleased with the mild and gentle demeanour of Murillo, inquired of him about his connections and family,—of his school and his master,—and the motives which induced him to quit his country, and undertake so distant a journey. Murillo replied with so much ingenuousness that Velasquez was charmed with him,—told him to stay where he was,—to consider Velasquez as his friend, and that house as his home.

Murillo gratefully accepted the generous offer of Velasquez, and proved himself worthy of this liberality by diligent study, and consequent improvement. He copied some paintings of Vandyck, of Ribera, and of Velasquez. These copies Velasquez presented to the king, and they were applauded by all the nobility and connoisseurs of the court. The judicious choice of Murillo was also approved, in selecting three masters celebrated, the one for his exquisite colouring, the other for his perfection in the claro obscuro, and the third for the spirit as well as truth to be seen in his productions; and Murillo was advised to copy no other masters, because these would enable him to attain a good tone of colouring, a facility of handling, and a greater freedom in drawing.

The rapid progress of Murillo surprised his patron, who, after the lapse of about two years, told our artist that he was now qualified to undertake the journey to Rome, and offered him letters of recommendation and other advantages from the King; but, whether actuated by the entreaties of his sister, or that he considered the object attained for which he left Seville, Murillo declined these advantageous offers, and excusing himself in very

* *La Feria* is a name given to a quarter of the parish of Omnium Sanctorum (All Saints) where every Thursday there is held a sale of old and new furniture, second-hand clothes, and numberless articles of cheap purchase. The inhabitants of this district are mostly artists and mechanics, who provide nearly all Andalusia with their productions; especially with pictures, painted generally in so bad a style that every badly-painted picture is named proverbially *Pintura de Feria*. These pictures were formerly executed with so much promptitude, that it happened sometimes that a scripture-piece or a saint which the devout buyer had desired has been painted while the price was being adjusted; or they have transformed, for example, the representation of a Saint Onofre into a Saint Christopher; or the Virgin del Carmen into a Saint Anthony of Padua. The traffic in this sort of pictures, and the speedy execution of them, was formerly very great when the demand for them was large in the Spanish colonies of South America. At that time this description of art was much better executed than in our own days; for many professors having no employment, applied to the freighters to the colonies, who never failed to occupy them, and paid them in proportion to the ability displayed.

We quote this information on the authority of the Spanish writer Cean Bermudez, who has contributed much that is interesting to the biography of Murillo. The biographical notices of this artist collected by Captain Edward Davies will be found interesting.

respectful terms, he acquainted his master and benefactor with his desire to return to Seville. Velasquez regretted this resolution, because he foresaw the high degree of perfection to which Murillo's genius in the art of painting was capable of attaining at Rome, but he did not interfere with his design, and Murillo returned to Seville, in the year 1645.

About this time a proposal was made to adorn the small cloister of the convent of St. Francis, at Seville, with eleven historical pictures, the figures of the full size; but the proposed remuneration was scanty, it being the result of small collections made from the members of the convent, and amounting to so small a sum that all the painters of Seville refused to paint pictures at so mean a price. Murillo, however, who had a reputation to acquire, undertook the work, and his services were accepted simply because those of no other painter were to be had.

The subjects of these pictures were chiefly from the Romish legends, and need not be described. As works of art their character is very high. Murillo worked at them with care and diligence, and the distrust of his employers was gradually converted into the most hearty gratification and delight. But the astonishment of the artists and connoisseurs of Seville knew no bounds: here were eleven fine pictures, arranged and executed without the knowledge of any one of these "directors of the public taste," and by an artist whom no one had heard of: suffice it to say that in a short time Murillo was acknowledged as the chief of the Sevillian school, because the genius of the painter enabled him to appeal to the feelings and affections of our common nature, by presenting truth in all her simple purity.

Murillo now became celebrated: the great, the powerful, and amateurs in art courted his intimacy, and desired to be painted by him. His rising talents procured him an introduction to Doña Beatriz de Cabrera y Solo Mayor, a lady of distinction and fortune at Pilas, to whom he was married in the year 1648. Murillo now became one of the most distinguished citizens of Seville, and his house was the resort of persons of influence, of taste, and talent in the arts.

The frontispiece to our present article is copied from a picture in the Dulwich Gallery, which is commended by Dr. Waagen in the following terms:—"A girl, with great simplicity of expression, holds some roses in her handkerchief,—a choice example of the very peculiar contrasts and accords of colours by which many of Murillo's pictures have such a magical effect. The background a landscape."

CASHMERE SHAWLS.

I.

The Goat of Cashmere, and the Native Manufacture.

Cashmere has been celebrated from very early periods, for the beauty of its situation, the comeliness of its inhabitants, and the products obtained thence. It is the name both of a country and the capital city therein. The country is a fertile valley, entirely inclosed by lofty mountains, in the north-west extremity of India. The countries which surround it are those of the Seiks, of the Afghans, of the Tibetians, and of the Chinese Tartars. It appears in early ages to have had Hindoo sovereigns, but to have been conquered by a Mohammedan usurper about five or six hundred years ago. The next conqueror was the Mogul emperor of Hindostan, Humayoon, in whose family the sovereignty remained till the rise of the powerful Afghan dynasty in the last century, when Cashmere became a province of Afghanistan. During the present century, when the contests of rival claimants to the Afghan crown had reduced the monarchy to a shadow, Runjeet Singh, the powerful chief of the Seiks, seized Cashmere; and we believe that it still remains under the sovereignty of his successor.

Throughout this series of changes, Cashmere appears to have been highly valued, on account of the large revenue derivable from its produce. The city of Cashmere is very large, containing nearly two hundred thousand inhabitants; but the feature for which the valley has been prized is the great productiveness of the soil, and also the productive industry of the inhabitants. The Cashmerians have become celebrated, not only throughout Asia, but in Europe likewise, for the beautiful *shawls* which they produce. At the time when the Honourable Mountstuart Elphinstone visited the Afghan dominions, Cashmere was considered to possess sixteen thousand shawl-looms, each giving employment to three men. A recent writer in the *Encyclopædia Britannica* remarks:—"For a long period the district of Cashmere, a province of Hindostan, formerly subject to the King of Candahar (Caubul), produced articles of this description in such perfection as to make them highly prized both in Europe and Asia. The date at which this manufacture took its rise is not known; but ever since the British established themselves in India, Cashmere shawls have been considered one of the most valuable manufactures of the East. These shawls are made both long and square, the former measuring generally fifty-four inches wide and a hundred and twenty-six long; the latter are from sixty-three to seventy-two inches square. The finest of them are composed of a material exquisitely soft and warm, surpassing in this respect probably any other material that has ever been fabricated into clothing." From the observations of Bernier, Strachey, and other writers, we gather the following particulars respecting the mode of manufacturing the shawls, as well as the general arrangements connected with the manufacture, in Cashmere.

It appears that the shops occupied by the shawl makers consist of a frame-work, at which the persons employed sit on a bench. The number employed on one shawl is two, three, or four; generally three. On plain shawls two persons only are employed, the weaving being effected with a long, narrow, and heavy shuttle; but those shawls of which the pattern is variegated are worked with wooden needles instead of a shuttle, there being a separate needle for the thread of each colour. The operations are consequently slow, proportionate to the quantity of work which the pattern may require. It is not unusual for a shop to be occupied with the manufacture of one single shawl for a whole year, if it be a remarkably fine one; and, in those which are most elaborately worked, not one quarter of an inch is completed in one day by three persons. Sometimes, in order to expedite the production of a shawl, it is made in separate pieces at different looms, and the worked pieces are afterwards sewed together.

The Oostand, or head workman at each loom, superintends the operation on the shawl, while the other persons are employed near him immediately under his direction. Should the pattern which is about to be worked in the shawl be new, or one with which the workmen are not familiar, the Oostand directs them as to the figures, colours, and threads, which they must employ; keeping before him a paper pattern of the device which is to be produced. During the operation of making, the rough or inferior side of the shawl is uppermost on the frame, or nearest the eye; notwithstanding which, the Oostand preserves the pattern with the utmost accuracy. The mode of operation in this respect seems to bear considerable resemblance to the mode of producing tapestry in the old times, when the rooms of the noble and the wealthy were hung with that production instead of with painted or printed paper.

A merchant who enters largely into the traffic in shawls, frequ ntly engages a number of shops, situated near one spot, where he employs men to work for him;

or else he supplies the Oostands or head workmen with thread which has been previously spun by women and afterwards dyed, and they carry on the manufacture at their own houses, having previously received instructions from the merchant respecting the quality of the goods he may require, their colours, patterns, &c. Under such circumstances, the employer finding all the materials, an Oostand receives from six to eight *pice* per day as wages, and a common workman from one to four *pice*,—a *pice* being a small coin in Cashmere, worth about three half-pence English money. After the shawls are completed, the merchant sends them to the custom-office, where each shawl is stamped; and he there pays a certain duty, the amount of which varies with the quality and value of the shawl. The duty is reckoned at one-fifth of their value; but the government-officers generally manage to fix the value at more than the goods are really worth, for the purpose of increasing the per-centage payable into the treasury of the state. In most Eastern countries, where a province is governed by a pacha, a satrap, a zemindar, or other vice-regal personage, the amount of duty levied on merchants and traders is too often left at the mercy of the governor, who seldom fails to appropriate a portion to his own private use.

The wool of which the Cashmere shawls are made is imported principally from Tibet and Tartary, in which countries the kind of goat which produces this wool thrives better than in most others. That which is brought from Rodauk is deemed the best, its price in Cashmere being from ten to twenty rupees for a *turruk* of twelve pounds. It is to the peculiar beauty and fine texture of this wool that the Cashmere shawls owe the high estimation in which they are held. The wool forms the inner coat with which the goat is covered; and the dark gray colour which belongs to it in a natural state, is removed from it by a bleaching process to which it is subjected in Cashmere, and which is effected principally by a preparation of rice-flour. When this bleaching has been completed, the wool is spun into yarn, and dyed of various colours. The weaving then proceeds, in the frames of which we have before spoken; and, after being woven, the piece is washed once; and the border, in which is displayed a variety of figures and colours, is attached to the shawls in so dextrous a manner that the junction can scarcely be detected. The price varies, under ordinary circumstances, from a sum equal to about ten shillings English, up to fifty; but when the flowered work is unusually elaborate, the price is increased to five or six pounds. This rate of charge does not appear large, to us who are familiar with British manufacture; but, when we take into account the very small daily wages of these Cashmere weavers, the proportionate price is then considerable.

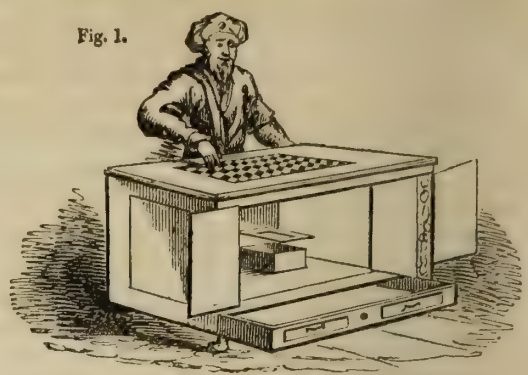
When Cashmere was tributary to Afghanistan, a considerable portion of the public revenue was exacted in shawls, instead of money. Many of the shawls are exported in an unwashed state, and in the western parts of Asia they are worn also in that state; but in India there is no market for unwashed shawls, and therefore they are washed and packed at Umritsir, a town near Lahore, where the process of washing is more carefully attended to than at Cashmere.

With regard to the extent of the shawl manufacture in Cashmere, nothing more than an approximate estimate can be made. Two hundred years ago, it was supposed that there were forty thousand looms in Cashmere. Mr. Strachey, however, in 1809, stated the number at sixteen thousand; and adds, "It would perhaps be difficult to determine with accuracy the quantity of shawls manufactured annually; supposing, however, that five of all kinds are on an average made at each shop or loom in the course of a year, the number would be eighty thousand, which is probably not far from the truth."

ON CHESS. No. XIII.

THE AUTOMATON CHESS-PLAYER. I.

Fig. 1.



A perspective view of the Automaton, seen in front, with all the doors thrown open.

PROBABLY no contrivance of the fertile genius of man ever excited so much wonder and delight for upwards of half a century as the Automaton Chess-player. The announcement and subsequent production of a machine which appeared so to vary its operations and modes of action as to suit the ever-varying circumstances of a game of chess were sufficient to account for this excitement throughout Europe.

The results of automatic machinery in general cease to interest the mind strongly so soon as the effects produced by it are clearly traced to well-established physical causes. The wind which turns the sails of a windmill; the flowing stream which gives motion to a water-wheel; and the elastic steam which elevates and depresses alternately a piston, are simple results of self-evident causes. These prime movers may impart motion to more or less complicated machinery, so as to produce the variegated carpet which adorns our rooms, or the sheet of paper upon which we write, but still the mind is satisfied that these results are produced by machinery in motion, which motion is imparted and sustained by some well-known force. So also in machines which imitate many of the motions and attributes of animals the mind is soon satisfied that the cause is mechanical, and resides within the automaton itself, since by a slight observation it is seen that the automaton is adequate to the performance only of a very limited routine of actions which are always repeated, like the tunes on a barrel-organ, in the same order.

Automata may be divided into three classes,—viz., the *simple*, the *compound*, and the *spurious*. The first class comprises those insulated automata, the movements of which result from mechanism alone, by the aid of which they perform certain actions, and continue them so long as the moving force is kept in an active state. As examples we may cite the trumpeter of Maelzel, the flute-player of Vaucanson, the self-acting piano-forte, * &c.

The second class includes those automata which, like the former are moved by machinery, but possessing at the same time a secret communication with human agency, are enabled to change the regular order and succession of their movements according to existing circumstances, and hence in some manner to assume the character of living beings.

The third class contains those automata which, under the semblance only of mechanism, are wholly directed and controlled by a concealed human agent.

Now it must be at once perfectly clear to every intelligent reader that the Automaton Chess-player cannot belong to the first class, because, great and surprising as the powers of mechanism assuredly are, the movements which result from it are necessarily limited and uniform. Those who know anything of the difficulties and intricacies of chess will readily admit that intellect, and that

* This class of Automata is described in *Saturday Magazine* Vol. XVIII., pp. 62 and 69.

of no mean order, is alone equal to the task of managing this game; that machinery can never usurp and exercise the faculties of mind, and therefore that the Chess Automaton, which in its day encountered, and often conquered, some of the first-rate professors of chess, cannot be admitted into the class of *simple* automata. Its claims to a place either in the second or in the third division the reader will easily decide upon after a perusal of the following details.

The Chess Automaton was the invention of Wolfgang de Kempelen, a native of Hungary, Aulic councillor to the royal chamber of the domains of the Emperor of Germany, and celebrated for his skill in mechanics. In the year 1769 de Kempelen, being at Vienna on business relative to his office, was ordered to court to be present as a scientific witness of some magnetic games or performances which one Pelletier, a Frenchman, was to exhibit before the Empress Maria Theresa. During the exhibition, Her Majesty having condescended to enter into familiar conversation with de Kempelen, he was induced to hint that he thought himself capable of making a machine, the effects of which would be more surprising, and the deception more complete than anything Her Majesty had seen during this magnetic exhibition. The empress took him at his word, and expressed so earnest a desire to see his project carried into execution that she obtained a promise of him to set about it immediately. He kept his word, and in six months again appeared at the Court of Vienna in company with the Automaton Chess-player.

It may readily be supposed that this automaton excited the admiration and surprise of every one who either saw it play or played with it. An account of the invention soon spread through a great part of Europe; the newspapers and journals were eager to announce its marvellous powers; the smallest scrap of information respecting it was read with avidity; and the result of all this excitement was that these accounts become daily more exaggerated and contradictory. Even an intimate friend of the inventor, who had repeated opportunities of witnessing the performances of the automaton, expresses himself in the following high-flown terms.

The boldest idea that ever entered the brain of a mechanic was doubtless, that of constructing a machine to imitate man, the master-piece of the Creation, in something more than figure and motion. M. de Kempelen not only conceived this idea, but also carried it into execution; his Chess-player being beyond contradiction the most astonishing automaton that ever existed. Never before did any mere mechanical figure unite the *vis motrix* with the *vis directrix*, or to speak more clearly, the power of moving itself in different directions as circumstances unforeseen and depending on the will of any person present might require. Was a wooden figure ever before seen playing at the most difficult and complicated of all games, frequently beating the most consummate adept, and setting him right if ever he deviated from the rules of the game?

The same writer published a series of letters to a friend descriptive of all the "externals" of the Chess Automaton*. These letters are extremely interesting, not only on account of the admiring simplicity with which he speaks of the invention of his friend; but for the information they give as to the mode of exhibition adopted by de Kempelen from the very first. Our author writes to a friend at a distance from Vienna, and begs him to set bounds to his curiosity, "for he cannot gratify it;" and although he admits the automaton "must be a deception," yet "he is forced to the humiliating avowal that it is as incomprehensible to himself as to the person he addresses." He is, however, kept in countenance by the fact that "others endowed with much superior knowledge and quicker penetration have not been more successful than himself in developing the mystery." And then growing warm with his subject he exclaims, "It is a deception!—granted: but such an one as does honour to human nature; a deception more beautiful, more surprising, more astonishing than any to be met with in the different accounts of mathematical recreations."

In our next article on this subject we will describe particularly the appearance and performances of the Chess Automaton. We will conclude our present notice with two extracts from the author already quoted.

The first idea that strikes you on a superficial examination of this chess-player is a suspicion that its movements are effected by the immediate impulse of some human being. I myself fell into this mistake. When I first saw the inventor shove his automaton, fixed to a kind of large cupboard, out of an alcove, I could not any more than the rest of the company avoid suspecting that this cupboard certainly contained a child, which from the size of it I supposed might be from ten to twelve years old. Many of the company were so fully persuaded of it that they made no scruple to declare it. I assented only in silence to their opinion, but was not less confused when I saw M. de Kempelen tuck up the dress of the automaton, take out the drawers, and open all the drawers of the cupboard, and in this situation roll it round the room on the castors which it goes upon, turning it in every direction so as to enable each person present to examine it on all sides. You may be sure that I was not a little eager to gratify my curiosity. I examined even the minutest corner of it, without being able to find anything throughout the whole capable of concealing an object the size of my hat. My vanity was grievously mortified to see my hypothesis, which at first sight appeared so plausible, instantaneously disproved.

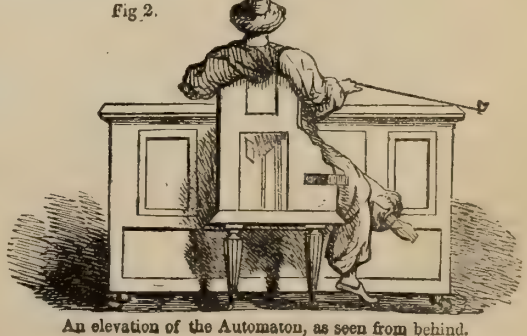
I know not whether the whole company were affected in the same manner: but I thought I could perceive in many of their countenances marks of the greatest surprise. One old lady in particular who had not forgotten the tales told her in her youth, crossed herself, and sighing out a pious ejaculation went and hid herself in a window seat, as distant as she could from the *evil spirit*, which she firmly believed possessed the machine.

Our author being thus fairly put upon a wrong scent has recourse to the idea of a secret communication between the automaton and some neighbouring apartment. This leads him to describe the residence of M. de Kempelen thus—

M. de Kempelen resides here at Presburg, and occupies with his family the first floor of his house; his little workshop together with his study where the automaton is placed, are on the second floor. When the automaton is exhibited, the company assemble in the lower apartment, from whence they are conducted up stairs. In passing through the workshop which serves as an antechamber to the study, you see nothing but joiner's, smith's and clockmaker's tools, lying in heaps in that confusion so characteristic of the abode of a mechanical genius. The walls of the study are in part hid by large presses, some containing books, others antiques, and the remainder a small collection of natural history: the intermediate spaces are decorated with paintings or prints, the performances of the master of the house.

The writer satisfies himself that no communication can possibly exist between the automaton and an adjoining room; this was indeed proved by the machine being carried for exhibition to the Imperial Palace.

Fig 2.



An elevation of the Automaton, as seen from behind.

* The title of this book is remarkable, and displays the spirit of credulity with which it was written. It is as follows:—Inanimate Reason; *or a circumstantial Account of that astonishing piece of Mechanism, M. de Kempelen's Chess-player.* By M. Charles Gottlieb de Windisch. This gentleman is spoken of, elsewhere, as the respectable author of *The History and Geography of the Kingdom of Hungary*, and the intimate friend and countryman of M. de Kempelen.

AGRICULTURAL CHEMISTRY.

I. On the Interchange of Crops.

At one of the meetings of the Chemical Section of the British Association for the advancement of Science, the preparation of a Report on Organic Chemistry was assigned to Dr. Justus Liebig, Professor of Chemistry in the University of Giessen. This Report has been edited by Dr. Lyon Playfair, and recently published under the title of "Organic Chemistry, in its applications to Agriculture and Physiology." From this work, which is one of the most profound and useful contributions to science, we propose to select a few subjects capable of being presented to the reader in a popular form.

It has long been known to the agriculturist that the growth of annual plants is impeded, and the produce rendered less abundant, by cultivating them during successive years on the same soil, and that, notwithstanding the loss of time, a larger quantity of grain is obtained when a field is allowed to remain uncultivated for a year. During this interval of repose, the soil, in a great measure, regains its fertility.

Experience has also led to the observation that certain plants, such as peas, clover, and flax, flourish on the same soil only after a lapse of years; whilst others, such as hemp, tobacco, rye, and oats, may be cultivated in close succession. It has been also found that several of these plants improve the soil, whilst others, and these are the most numerous, impoverish or exhaust it. Fallow turnips, cabbage, beet, spelt, summer and winter barley, rye, and oats, are supposed greatly to impoverish the soil; whilst wheat, hops, madder, late turnips, hemp, poppies, teasel, flax, weld, and licorice, are supposed to exhaust it entirely.

From the earliest times manure has been employed to increase the fertility of soils; and experience has proved that manures restore certain constituents to the soil, which have been removed by the plants grown upon it; but it has been observed that crops are not always abundant in proportion to the quantity of manure employed, even, although it may have been of the most powerful kind: that the produce of many plants diminishes in spite of the apparent replacement of the substances removed from the soil by manure, when they are cultivated on the same field for several years in succession.

It has been remarked, on the other hand, that a field which has become unfitted for a certain kind of plants was not on that account unsuited for another; and, upon this observation, a system of agriculture has been gradually formed, the chief object of which, is to obtain the greatest possible produce with the least expense of manure.

It was deduced from the foregoing facts that plants require for their growth different constituents of soil, and it was very soon perceived that an alternation of the plants cultivated maintained the fertility of a soil, quite as well as leaving it at rest or fallow. It was evident, therefore, that all plants must give back to the soil in which they grow, different proportions of certain substances, which are capable of being used as food by a succeeding generation.

Many explanations have been offered respecting the cause of the favourable effects of the alternation of crops; but the theory of De Candolle is the one which has received the greatest share of attention.

This distinguished botanist supposes that the roots of plants imbibe soluble matter of every kind from the soil, and thus necessarily absorb a number of substances which are not adapted to the purposes of nutrition, and must subsequently be expelled by the roots, and returned to the soil as excrements. Now, as excrements cannot be assimilated by the plant which ejected them, the more of these matters which the soil contains, the more unfertile must it be for plants of the same species. These excrementitious matters may, however, still be capable of assimilation by another kind of plants, which would thus remove them from the soil, and render it again fertile for the first. And, if the plants last grown also, expel substances from their roots, which can be appropriated as food by the former, they will improve the soil in two ways.

This view of the subject is countenanced by many well-known facts. Every gardener knows that a fruit-tree will not grow on the same spot, where another of the same species has stood; at least not till after a lapse of several years. Before new vine-stocks are planted in a vineyard from which the old have been rooted out, other plants are cultivated on the soil for several years. It has also been remarked, that several plants thrive best when growing beside one another; and, on the contrary, that others mutually prevent each other's growth. Whence it was concluded, that the beneficial influence in the former case depended on a natural interchange of nutriment between the plants, and the injurious one in the latter on a poisonous action of the excrements of each on the other respectively.

But the theory of M. De Candolle has been confirmed in a satisfactory manner by a series of admirable experiments by M. Macaire which we will briefly detail.

The roots of the *Chondrilla muralis* were carefully cleaned and immersed in filtered rain water: the plant continued to flourish, and put forth its blossoms, and at the end of eight days the water was of a yellowish colour, indicating to the smell and taste the presence of a bitter narcotic substance, similar to that of opium,—a result which was further confirmed by using chemical tests, and by a reddish-brown residuum which remained after evaporating the water. It was ascertained that neither the roots nor stems of the same plants, when completely detached and placed in water could produce this effect, which seems to be the result of an exudation from the roots, necessary to the health of the plant. By comparing the results of various experiments on the quantity of matter thrown off by the roots of the French bean, by night and by day, it was found to be much more considerable by night,—an effect which it is natural to refer to the interruption of the action of the leaves when deprived of light, and when the corresponding absorption by the roots is also suspended. This was confirmed by the result of some experiments made on the same plants by placing them during the day in a darkened room, when the excretion from the roots was found to be much increased; but, even when exposed to the light, there is always some exudation, though in small quantity, going on from the roots.

By this excretory process plants are enabled to get rid of any noxious matters which they may have absorbed from the soil. This was proved by experiments on several plants, among which was the common cabbage. The root of the cabbage was washed clean, and the fibres separated into two bunches, one of which was immersed in a weak solution of acetate of lead, and the other bunch in pure water, contained in a separate vessel. After a few days, during which the plants vegetated tolerably well, an appreciable quantity of acetate of lead was found in the vessel which contained at first only pure water. In order to prove that the poison was actually absorbed into the body of the plant the experiment was varied: the plant was first allowed to remain with its roots immersed in a solution of acetate of lead: it was then removed and carefully washed, in order to get rid of all traces of the solution from the surface of the roots, after which it was placed in a vessel containing pure water, which in two days' time became contaminated with acetate of lead. Similar results were obtained when lime-water and a solution of common salt were substituted for the acetate of lead.

M. Macaire also found that the water in which certain plants had been kept was injurious to other plants of the same species, while it produced decidedly beneficial effects on plants of a different kind.

When substances which cannot from their nature be employed in the nutrition of a plant exist in the matter absorbed by its roots they must be again returned to the soil as excrements, which, however, may be serviceable, or even indispensable, to the existence of several other plants. Substances, however, that are formed by the vegetable organs during the process of nutrition, which are produced in consequence of the formation of woody fibre, starch, albumen, gum, acids, &c., cannot again serve in any other plants to form the same constituents of vegetables.

The matter thrown off by the roots of plants as excrements, undergoes during autumn and winter a useful change from the action of air and water: its putrefaction, and at length by continued contact with the air, which tillage is the means of procuring, its decay, are effected; and at the commencement of spring it has become converted, either in whole or in part, into a substance which supplies the place of humus*, by being a constant source of carbonic acid.

The quickness with which this decay of the excrements of plants proceeds, depends on the composition of the soil, and on its greater or less porosity. It will take place very quickly in a calcareous soil; but it requires a longer time in heavy soils, consisting of loam or clay.

The same plants can be cultivated with advantage on one soil after the second year, but in others not until the fifth or ninth, merely on account of the change and destruction of the excrements, which have an injurious influence on the plants, being completed in the one, in the second year; in the others not until the fifth or ninth.

In some neighbourhoods clover will not thrive till the sixth year; in others not till the twelfth; flax in the second or third year. All this depends on the chemical nature of the soil; for it has been found by experience, that in those districts where the intervals at which the same plants can be cultivated with advantage are very long, the time cannot be shortened even by the use of the most powerful manures. The destruction of the peculiar excrements of one crop must have taken place before a new crop can be produced.

Flax, peas, clover, and even potatoes, are plants, the excrements of which in clayey soils require the longest time for their conversion into humus; but the use of alkalies and burnt lime, or even small quantities of wood ashes, (which have not been wetted so as to remove the alkali contained in them,) must enable a soil to permit the cultivation of the same plants in much less time.

A soil lying fallow owes its earlier fertility, in part, to the destruction or conversion into humus of the excrements contained in it, which is effected during the fallow season, at the same time that the land is exposed to a further disintegration. In the soils in the neighbourhood of the Rhine and Nile, which contain much potash, and where crops can be obtained in close succession from the same field, the allowing of the land is superseded by the inundation. The artificial irrigation of meadows effects the same purpose. It is because the water of rivers and streams contains oxygen in solution, that it effects the most complete and rapid putrefaction of the excrements contained in the soil which it penetrates, and in which it is continually renewed. If it was the water alone which produced this effect, marshy meadows should be the most fertile.

A fertile soil ought to afford to a plant all the inorganic bodies necessary to its existence in sufficient quantity and in such condition as allows their absorption. All plants require alkalies, and these are contained in some plants (as in the grasses) in the form of silicates; in others in the form of tartrates, citrates, acetates, or oxalates. Some species of plants require phosphate of lime, or phosphate of magnesia, and several do not thrive without carbonate of lime.

* Woody fibre, in a state of decay, is called *humus*, and is the principal constituent in mould. Humus acts in the same manner in a soil permeable to air as in the air itself; it is a continued source of carbonic acid, which it emits very slowly. An atmosphere of carbonic acid formed at the expense of the oxygen of the air surrounds every particle of decaying humus. The cultivation of land by tilling and loosening the soil, causes a free and unobstructed access of air. An atmosphere of carbonic acid is therefore contained in every fertile soil, and is the first and most important food for the young plants which grow in it.

THE PANDEAN PIPES, OR MOUTH-ORGAN.

> The rural ditties were not mute,
> Tempered to the oaten flute,
> Rough satyrs danced, and fauns with cloven heel
> From the glad sound would not be absent long,
> And old Damætas loved to hear our song.——Milton.

Among the musical instruments familiarly known to us at the present day, there is one which, though it has acquired a sort of a character for vulgarity, is one of the most ancient of all. We allude to the *Mouth-organ*, known to classical readers by the names *Syrinx*, and *Fistula Panis*, or Pan's Pipes.

The formation and the mode of playing musical instruments among the ancients have formed the subject of considerable research; great difficulty being experienced in knowing the proper interpretation or translation to be given to certain terms used by the classical writers. The first attempt at a wind instrument seems to have been the employment of the shell of some particular fish, or the horn of a quadruped. To this probably succeeded the use of the *Avena*, or single oaten stalk; the *Calamus*, or single reed; and the *Syrinx* or *Fistula*, a number of reeds of different sizes, ranged side by side, each one stopped at the lower end. It was the opinion of Dr. Burney, that such simple instruments as these, in which each pipe is employed to yield but one note, preceded the employment of those which were provided with *foramina*, or holes, and which, by stopping one or more of these holes with the fingers, could be made to yield several notes. When this latter method became known, a great advance in the musical art resulted; and the artificers gradually attained the skill to make such instruments of box-tree, laurel-wood, brass, silver, and even gold.

Flutes or pipes, called *Tibiæ*, were much used in the theatrical exhibitions of the ancients, some of them approaching nearly to the form of a shepherd's pipe, as represented in old pictures, and indeed all of them bearing more resemblance to a flageolet than to a modern flute. But with regard to the instrument now called a mouth-organ, it does not appear to have been similarly employed. It is a circumstance not a little remarkable, that the god Pan is almost invariably represented as playing on this instrument; a fact which, whatever may have been its source, is strongly indicative of the familiar use of such an instrument among the early Greeks. In some of the pictures wherein Pan is introduced, the syrinx on which he appears to be playing, is composed of tubes or pipes having a square sectional area; while in others the pipes are of cylindrical form. In the cut at the end of this article, the pipes are six in number, and of a square form. This representation is taken from an ancient basso-relievo of Greek sculpture, in the Giustiniani Palace at Rome, the sculpture pourtraying the nursing of Jupiter by Amalthea. Pan is holding the syrinx in his left hand, while in his right he grasps a horn, resembling the *shawm*, represented upon the Arch of Titus, among the instruments supposed to have been copied from those brought by this emperor from Jerusalem.

A French writer of the last century relates his having seen at Rome, on a monument in the Farnese Palace, a syrinx with eleven pipes; the first five being of equal lengths, and consequently producing notes of the same pitch; with six others of equal diameter, but of different lengths from the first five. "I confess," says he, "that I am unable to conceive the use of the five first reeds or pipes of the same length for no two of them could be made to sound at once. Is it not possible that these

five pipes were half tones, and differed from each other in length so little, as to seem all of a length? or perhaps they differed in diameter, and may have all produced different tones, though of equal length." But to this supposition it has been objected, that the ancient Greeks had no succession of regular semitones in their musical scale.

Without dwelling longer on the early history of the syrinx,—except to remark that this word is the Greek name for the instrument, that *Fistula Panis* is the Latin name, that *Pan's Pipes* is the English translation of this latter name, and that *mouth-organ* is a name in some degree expressive of the mode in which the instrument is played,—we will describe the acoustical principles on which this instrument acts.

When we blow into an open tube, that is, a tube of cylindrical bore with both ends open, we merely send a forcible current of air from one end of the tube to the other, and produce a *wind*, which is nothing more than a slightly audible agitation of the air. But when one end of the tube is stopped, and we blow into the open end in an oblique manner, with the lips compressed, so as to give a forcible impetus to the breath, a musical *note* results, which is more or less pleasing according to circumstances. Now the difference between a *sound*, such as that resulting from the mere emission of breath, and a musical *note*, consists in this, that in the latter case a current of air is set into regular vibration, performing a certain number of regular oscillatory movements in a certain space of time. It has been found by experiment, that a note having the same pitch as the middle A of the treble clef, is the result of 420 vibrations in a second,—a number indicating an astonishing degree of rapidity in the successive changes in the conditions of the air.

The vibrations here spoken of may be excited either by the agitation of a musical string, or of a column of air in a pipe; the pitch depending on the absolute frequency of vibration, and not upon the manner in which those vibrations are excited. In the case now before us, we blow in a tube, the lower end of which is stopped, and thus excite a rapid oscillatory motion of the particles of air within the tube, which motion is communicated to the external air, and thence to the ear.

But it is a very remarkable part of the phenomenon, and one on which the construction of the mouth-organ mainly depends, that the pitch of the note resulting from these vibrations varies with the length of the pipe; a shorter pipe yielding a more acute or elevated tone than a long one. The mode in which this difference arises is as follows. The vibration of the column of air in the tube, takes a certain time to travel to a certain distance,—viz., at the rate of 1125 feet per second; so that the time which it takes to travel from end to end of the tube will depend simply on the length of the tube, or on the proportion which that length bears to 1125 feet. Consequently a short tube permits the transference of this agitation from end to end, in a shorter time than a long tube; and, as a consequence of this, the repetition or succession of these impulses occurs with greater rapidity. The air will vibrate twice as fast in one tube as in another tube of twice the length; because the agitation has only half the distance to travel in each separate vibration.

There is a curious connexion between the relative lengths of two pipes, and the relative pitch of the notes which are yielded by them. Let us suppose that we have one which yields the A before mentioned, that is, the note resulting from 420 vibrations in a second. If the other be of such a length as to give 840 vibrations in a second (and this will result if, other things being the same, it be only half as long as the other); then the note yielded will be A, one octave higher than the A of the other pipe. If the second one be so much longer that it only gives 210 vibrations in a second, then it yields a note one octave lower than the A first spoken of, and two octaves lower than the other A. But if the lengths of the two pipes be in any less simple proportion, the notes produced will form intermediate steps in the musical scale; thus 256 vibrations in a second, being equal to $\frac{4}{5}$ of 420, will yield the note C, a major-sixth (in musical language) below the former. If we consider this C as a kind of standard note, we shall find that the following fractions, representing the comparative frequency of vibration, 1, $\frac{9}{8}$, $\frac{5}{4}$, $\frac{4}{3}$, $\frac{3}{2}$, $\frac{5}{3}$, $\frac{15}{8}$, 2; or the numbers 256, 288, 320, 341$\frac{1}{3}$, 384, 416$\frac{2}{3}$, 480, 512, will represent the vibrations necessary to produce the succession of notes of the natural scale, C, D, E, F, G, A, B, C. By producing a number of vibrations greater than any here indicated, we shall produce a higher note; and with a less number, a lower note.

On these principles the *mouth-organ* is constructed. It consists of a number of hollow canes or reeds, ranged side by side, and secured by cross bands of cane. The bottom of each pipe is stopped, either by one of the natural joints of the cane, or by wax or some similar substance; while the upper end is open. The lengths of the pipes decrease gradually from one end to the other, the longer being also generally the wider pipes. This increase of diameter is intended, not so much to affect the pitch of the note, as to give a greater roundness and richness to the tone of the lower notes. The length of the pipe is, as before stated, the circumstance which principally regulates the pitch; and this length is arranged on the principles just explained. It is very probable that the maker of the instrument is ignorant of the principles on which he is proceeding; but his proceedings are not the less governed by principles. He endeavours so to regulate the lengths of the pipes as to produce the succession of notes forming the regular Diatonic scale; and in so doing, he finally settles on such lengths as will will yield the numbers of vibrations indicated above, or at least, the *proportions* of those numbers; for the actual number will depend on the octave which forms the main part of the instrument.

The mouth-organ is, from its nature, not very likely to get out of order, since the lengths of the pipes, on which the pitch of the notes depends, are less likely to yield from changes of temperature than the other dimensions. It must be obvious to any one at all acquainted with the action of organ pipes in general, that the reeds of a mouth-organ bear a considerable resemblance to them, inasmuch as they produce sounds by the longitudinal vibration of a column of air. Hence the popular name of the instrument.

LONDON:
JOHN WILLIAM PARKER, WEST STRAND.
PUBLISHED IN WEEKLY NUMBERS, PRICE ONE PENNY, AND IN MONTHLY PARTS, PRICE SIXPENCE.
Sold by all Booksellers and Newsvenders in the Kingdom.

THE

Saturday Magazine.

No. 579. JULY 10TH, 1841. Price One Penny.

NUREMBERG

THE CASTLE OF NUREMBERG.

The town of Nuremberg, or Nürnberg, in Bavaria, though fallen from its ancient wealth and consequence, and become, in a commercial sense, a dull and unattractive spot, will nevertheless be pleasing to the traveller of taste, and will fully repay the attention he may be induced to bestow on its examination. In former days it was one of the most flourishing towns included in the Hanseatic league, and was reckoned among the most wealthy of the free Imperial cities. It was the residence of emperors, the seat of diets, and, before the trade with the East Indies took a new direction, the focus of commerce between Asia and Europe. Nor were these its only advantages: the manufactures of Nuremberg were long and justly celebrated, and brought a large accession of wealth to the town. Various mathematical and musical instruments were invented, and the first pocket-watches made in that town. The manufacture of these articles, as well as of hardware of all kinds, and toys of brass and wood, caused Nuremberg to be highly celebrated. The trade in such wares is still very considerable, and, owing to the cheapness of the toys in particular, half the children in Europe are supplied with playthings, called Dutch toys, from that source. These toys are chiefly made by the peasants of the Thuringian forest, who employ themselves and their families on such labours during the winter, and by their simple and frugal habits, are able to produce them at a surprisingly low price. For the sale of Nuremberg wares an annual fair is held, at which much business is transacted. Yet, compared with its ancient traffic—so extensive as to give rise to the proverb,

> Nuremberg's hand
> Goes through every land,—

the present trade of Nuremberg may be called trifling, as the condition of the city is also greatly altered.

The outward aspect of Nuremberg has not partaken much of the decay which has fallen on its commercial interests, and it is in the appearance of the city, as it stands surrounded by feudal walls and turrets, and inclosed within arched gates, with massive cylindrical watch-towers, that the traveller may recognise its ancient grandeur and strength; while, as he examines the quaint buildings of the city, and wanders through its irregular streets, he may fancy himself carried back to a distant century. Most of its churches are in a state of beautiful preservation, and have escaped in a manner that seems almost miraculous, the storm of regular warfare, and the outbreaks of mistaken zeal. The principles of the Reformation were early embraced by the inhabitants of Nuremberg; but the churches were not, as in too many other instances, despoiled of their architectural embellishments. The private dwellings, many of them of a palace-like extent, and built of stone, are likewise in excellent preservation, and are in some instances still inhabited by the families whose forefathers originally constructed them.

Nuremberg is celebrated as the birth-place of Albert Dürer, called the Raphael of Germany; of the famous

sculptor Peter Vischer, the poet Hans Sachs, and the gallant knight Behaim, the friend of Columbus.

St. Sebald's church, a very beautiful Gothic edifice, contains the master-piece of art, of which Germany is justly proud, the *Shrine of St. Sebaldus*, executed by Peter Vischer, after a design by Albert Dürer. The sculptor, assisted by his five sons, spent thirteen years of labour on this work, and completed it in 1519. It is a miniature Gothic chapel in bronze, consisting of a rich fretwork canopy, supported on pillars. The figures of the Apostles occupy twelve niches around the shrine, and, for their grace, expression, and varied action, are justly extolled by every person conversant with fine sculpture. Above these are twelve smaller figures of Fathers of the Church; and, scattered around, among foliage and flowers, are about seventy fanciful representations of mermen, animals, &c. The relics of the saint are enclosed in an oaken chest, encased in silver, which is most elaborately worked in bas relief. Finally, at that end of the shrine which faces the altar, is an admirable statue of the artist himself, in a mason's dress, with apron on, and chisel in hand; and at the opposite end a figure, equally excellent, of St. Sebald. The same church also contains "The Descent from the Cross," painted by Albert Dürer.

The church of St. Lawrence is considered to be the finest church in Nuremberg. It is of a noble Gothic architecture, and is very rich in decorations. The windows are exquisitely painted, and one of them, the Volkamer window, for the depth and brightness of its colours, and the excellence of its design, is said to be scarcely equalled throughout Europe. This church contains the celebrated *Sacrament-hauschen*, or tabernacle for the reception of the sacramental wafer, delicately executed in the form of a spire, of Gothic openwork, by Adam Kraft; the whole of the exquisite stone structure, which tapers to the height of sixty-four feet, is supported by three figures, representing himself and his apprentices.

The castle of Nuremberg occupies the most northern and elevated position within the town. It is of great antiquity, so that no precise date can be assigned for its erection. It is built on a rock of red stone, unlike any other found in the country, and tradition attempts to account for this in the same way that it explains many other curious facts, by attributing it to the work of a magician. The rock and castle, say the superstitious of Nuremberg, were both transported from the neighbourhood of the Rhine in one night. This edifice towers above all the other buildings, and commands the best view of Nuremberg, and of the country around. It appears to have received few modern additions, and is therefore interesting as a specimen of the ancient style. The emperors of Germany made the castle of Nuremberg at various periods their residence: they took pleasure in the prosperity of the city, knowing its importance, and they found its situation, nearly in the centre of their dominions, well adapted for their convenience. The imperial regalia were deposited in the chapel of the Holy Ghost for nearly three centuries, but are now removed to Vienna. The castle has two towers, supposed to be of extreme antiquity, the Pentagonal tower, and the Heathen tower, so called from some carved figures upon it, said to be idols. It also contains two very remarkable chapels, one supported by low and thick arches, and assigned to the tenth century; the other, or upper chapel, resting on slight marble pillars, with Corinthian capitals, and also very ancient. The Corinthian pillars, says tradition, were brought from Rome by the evil one, who had laid a wager with the almoner that he would carry them in less time than mass could be performed. Three pillars were safely deposited, and the spirit had just arrived at the chapel with the fourth, when he found the clerk putting out the candles, and mass concluded. This put him in such a fury, that he dashed the pillar to the ground, and broke it in two pieces. Lest any one should presume to doubt the truth of the story, the fractures are shown where the pillar was cemented together, and an image of the devil's head is fixed in the wall facing the door of the chapel.

Briefly to notice some of the other public buildings of Nuremberg, the *Rath-haus*, or town-hall, is one of the finest in Germany. It is built in the Italian style, and contains, among other curiosities, a number of paintings, some of which are by Albert Dürer, and have suffered much by time, having in some cases been injudiciously restored. In the upper story of the Rath-haus is a singular representation, in stucco, of a tournament held there in 1434, the figures as large as life.

The church of St. Ægidius is a handsome modern building, in the Italian style. It succeeded a chapel originally founded in 1140 for some Scotch Benedictine monks. This church contains a fine altar-piece, representing Christ lying dead in the arms of the Virgin, by Vandyke. Near this church stands the gymnasium, or high school, founded by Melancthon, whose statue is erected in front of it.

The church-yard of St. John deserves to be mentioned, as having been the burial-place of many noted persons. There are about three thousand grave-stones in this church-yard, all regularly numbered, and mostly decorated with bronze plates, bearing coats of arms, and devices of deceased patricians. No. 649 is Albert Dürer's grave, No. 503 Hans Sachs', a celebrated cobbler and poet, whose poems, mostly of a satirical sort, exceed six thousand in number. Sandrach and Adam Kraft also lie interred here. This burial-place is situated about a mile from the town; and between it and the town gate are stationed, at regular distances, seven stone pillars, each bearing a representation, in bas-relief, of a scene in the passion of our Saviour. These pillars were set up, according to tradition, by a citizen of Nuremberg, named Martin Ketzel, as a representation of the Dolorous Way, in Jerusalem, along which our Saviour is supposed to have passed, in going from Pilate's house to Calvary.

There are many well-conducted public institutions in Nuremberg, such as a polytechnic institution, a gymnasium, numerous schools, a society for the encouragement of manufactures, &c. The public paper, called the *Nuremberg Correspondent*, is one of the most widely-circulated in Germany. At one period, the proprietor, editor, and printer were all females.

We will conclude our notice of this city by mentioning the date of the most important inventions ascribed to its inhabitants. The first watches (called Nuremberg eggs) were made by Peter Hele in 1500; the gun-lock by a person not known, about 1517; the air-gun by Lobzinger, in 1560; the clarionet by Christopher Denner, in 1690; wire-drawing machine by Rudolph, in 1360; brass by Erasmus Ebner, in 1550.

OLD ENGLISH NAVIGATORS.

For Britons, chief,
It was reserved, with star-directed prow,
To dare the middle deep, and drive assured
To distant nations through the pathless main.
Chief, for their fearless hearts the glory waits,
Long months from land, while the black stormy night
Around them rages, on the groaning mast
With unshook knee to know their giddy way;
To sing, unquelled, amid the lashing wave;
To laugh at danger. Theirs the triumph be
By deep Invention's keen pervading eye,
The heart of Courage, and the hand of Toil,
Each conquered ocean staining with their blood,
Instead of treasure, robbed by ruffian war,
Round social earth to circle fair exchange,
And bind the nations in a golden chain.—THOMSON

As the naval glory of England, whether in the sad necessity of war, or in the laudable endeavour to promote

the operations of commerce and geographical science, must be a subject of interest generally to the inhabitants of the British islands; and as maritime discoveries, like other achievements of the human race, have, under the guidance or permission of Providence, progressed gradually, some notice of the lives of those eminent individuals who, in former days, contributed to the establishment of British credit on the highway of the seas, may be generally acceptable. We propose, therefore, to devote a series of articles to the lives of the old English navigators,—men who have so largely contributed to the civilization of the human race by rendering easy and familiar the passage of the ocean, which, up to the beginning of the fifteenth century, was, very generally regarded with those feelings which guided the pen of an old writer in the following passage:—

The ocean, (he remarks,) encircles the ultimate bounds of the inhabited earth, and all beyond it is unknown. No one has been able to verify anything concerning it, on account of its difficult and perilous navigation, its great obscurity, its profound depth, and frequent tempests; through fear of its mighty fishes, and its haughty winds; yet there are many islands in it, some of which are peopled, and others uninhabited. There is no mariner who dares to enter into its deep waters; or if any have done so, they have merely kept along its coasts, fearful of departing from them. The waves of this ocean, although they roll as high as mountains, yet maintain themselves without breaking; for if they broke, it would be impossible for a ship to plough them.

CABOT.

The history of this great navigator has been so much clouded in obscurity or misrepresented, that it would appear at first sight doubtful, whether we should put Cabot at the head of the naval worthies of *our* country; but the prominent parts of the following narrative will, we trust, satisfy the reader that we are justified in the course which we have taken.

Sebastian Cabot, the subject of this narrative, was the son of John Cabot, or Gabotto, as his name is sometimes found written. The elder Cabot was undoubtedly a native of Venice, who frequented England on commercial affairs; but little more is known of him than that he was a wealthy, intelligent merchant, and fond of maritime discovery. When his business caused him to sojourn in this country, his residence was at Bristol, where Sebastian was born in the year 1477. The young Cabot was early instructed in geography, navigation, and mathematics. When only nineteen years of age, he was included with his two brothers in a patent, dated 5th of March, 1496, and granted by Henry the Seventh to John Cabot, his father, for the discovery and conquest of unknown lands. The object of this expedition seems to have been, to find out new countries in a north-westerly direction, and above all, a shorter and more convenient passage to the East Indies.

It is remarkable, as showing the zeal and enterprise of these navigators, that this expedition, consisting of five ships, was equipped at the sole expense of the adventurers, which was probably the reason why these mariners did not set sail till the spring of the following year. The ship which the Cabots sailed in, was equipped at Bristol, and named "the Matthew." On the morning of the 24th of June, they first saw the coast of North America, probably the part now called Labrador, about 56° N. It does not appear that there is any farther account of this discovery; but it seems probable that the expedition returned to England immediately, in order to re-visit the newly discovered countries, with more definite objects of trade and empire.

In the privy purse expenses of Henry the Seventh is found a very curious item,—"10th August, 1497: To hym that found the new Isle £10." This isle is supposed to be Newfoundland, which is to the south-east of Labrador. This seems probable; for in another patent, granted to John "Kabotto," he is permitted to take six ships in any haven of the realm, of the burden of 200 tons and under, "to convey and lede to the Londe and Isles of late founde by the seid John, in owre name, and by our commaundemente," &c. At this time Sebastian seems to have been esteemed as the most scientific navigator of the family. When, about this period, the great discovery of Columbus began to be talked of in England, as a thing almost more divine than human, the effect of it upon young Cabot's imagination was to excite "a mighty longing," to use his own words, "and burning desire in his heart that he too should perform some illustrious action." For some reason or other the elder Cabot did not head the expedition just referred to; but it devolved on Sebastian, whose progress in naval science, aided by his father's example and instruction, had been very great. Our mariner, at this time, could not have been more than twenty-two years of age. About this time, *i.e.*, in 1499, John Cabot died; but there is no record of his death, nor is anything whatever known of Sebastian Cabot for the next twelve years.

In making the voyage above referred to, Cabot sailed from England in the summer of 1498, and directing his course by Iceland soon reached Newfoundland, which he called *Terra de Baccalhaos*, or land of cod-fish, from the great quantity of that sort of fish found there.

Of this remarkable voyage a short account is preserved by Peter Martyr, the historian of the New World, a writer of high authority, and an intimate friend of the navigator, who, at the time he wrote, was in the habit of paying him frequent visits at his house.

Martyr tells us that the northern seas, between Europe and America, were navigated and explored by Sebastian Cabot, who fitted out two ships in England at his own cost, and with three hundred men directed his course so far towards the North Pole, that, even in the month of July, he found great heaps of ice swimming in the sea, and almost continual daylight. In our summer the sun does not set at the North Pole for several months together; which curious fact is illustrated and explained in a Supplement on Astronomy, in a former part of this work [No. 411].

Martyr goes on to say that Cabot saw the land cleared of ice, which had been melted by the heat of the sun; and, seeing such masses of ice drifting down before him, he was compelled to turn his sails, and follow the west, then coasting still by the shore, he was brought far into the south by reason of the land bending so much southward. As he passed along the coasts, called by him *Baccalhaos*, he affirmed that he found the same current of the waters towards the west, which the Spaniards met with in their southern navigations, with the single difference that they flowed more gently. To account for the phenomenon of the waters of the ocean moving westward, which was of course first observed in the Atlantic, Martyr conceived that there must exist between the Old and New Hemispheres of the globe, certain great gaps or open places, through which the waters continually pass from east to west. The cause of this natural phenomenon, however, Cabot was expected to elicit;—the question at issue being simply this:—Why the seas in that part ran with so swift a current from the east to the west?

Our more advanced knowledge of physical geography and astronomy enables us to explain the phenomenon just referred to. The principal currents are produced by the movement of the waters, perpetually setting from the polar regions towards the equator, and by the progression of the tropical seas towards the west; both of which are occasioned by the earth's rotation on its axis. By the laws of mechanics, any fluid body in rotation has a tendency to accumulate in a heap at the part in most rapid motion; and accordingly, we find the waters of the polar circles naturally flowing from their own stiller region, to that of the more rapidly revolving equatorial zone Strong currents are thus formed, which, in some

instances bear with them vast masses of ice. These are carried to a greater or less distance, according to local circumstances. Now the water which arrives among the equatorial regions from the north, has not a rotatory motion of equal velocity with that of this portion of the globe; and consequently, it has an *apparent* motion from east to west.

Martyr informs us that at Newfoundland, the cod-fish, which the navigators took for tunnies, were so numerous, that they actually impeded the sailing of the ships! The inhabitants of those regions were found covered with the skins of beasts; but yet, not without the use of reason. He also relates that there are plenty of bears in those parts which feed upon fish. It is the habit of these animals to throw themselves into the midst of the shoals of fish, and seizing their prey, to bury their claws in their scales, drag them to land, and there devour them. On this account, he says, these bears seldom disturb men.

After sailing down southward with a view to a passage to the Indies, and discovering the coast of Florida, Cabot returned home, chiefly through want of provisions. Soon after the death of Henry the Seventh, he was sent for by Ferdinand, king of Spain, in which country he arrived in September, 1512, and immediately received the title of Captain, with a liberal salary. It appears from Spanish authorities, that Cabot had felt disgusted with the want of consideration shown him in England; but this seems to have been mainly owing to the civil disturbances in England, and the preparation for war with Scotland.

In the year 1515, Cabot was appointed to revise the maps and charts in use among Spanish navigators: he was also preferred to the station of member of the council of the Indies. He was also selected to conduct an important expedition for making new discoveries towards the west; but this plan was interrupted by the king's death. The new king of Spain, Charles the Fifth, was occupied elsewhere, and did not reach Spain for some time, during which the court was a scene of abominable intrigue. Fonseca, the enemy of Columbus, was in authority, and the insults offered by him and his creatures to Cabot, caused the return of the latter to England. In 1517 he was employed by Henry the Eighth, in connexion with Sir Thomas Perte, to make another attempt at a north-west passage. In this voyage he seems to have reached lat 67½° N., and to have entered Hudson's Bay, and given English names to many places therein. From this expedition he was obliged to return sooner than he intended, through the malice or timidity of Sir Thomas Perte, and the mutinous conduct of his crew.

After this voyage Cabot again visited Spain, where he was named, by Charles the Fifth, Pilot Major of the kingdom, and entrusted with the duty of examining all projects of voyages of discovery. The Molucca islands, in the Eastern Archipelago, at this time very much engaged the attention of mankind. The pope had presumed to give away the newly discovered countries of the world between Spain and Portugal; and the latter power having earnestly represented 'that the limits, assigned to her by the pope in his division of the New World, would include the Moluccas, it was resolved that a solemn conference should take place, in which all parties should state their claims, and experienced men should attend for the purpose of reference. At the head of this list was Cabot, and Ferdinand Columbus, son of the great navigator. The conference was held at Badajoz, in April, 1524, and by the end of May, sentence was pronounced that the Moluccas were within the Spanish division of the world. The Portuguese retired in disgust, and threatened an expedition to destroy any Spanish or other vessels trading within the disputed territory. Immediately after the decision, a company was formed at Seville to prosecute the trade to the Moluccas, and Cabot was appointed to the command of the first expedition sent out by the company. Unfortunately, the officers under Cabot were personally hostile to him. The expedition set sail in April, 1526, and proceeded to cross the Atlantic. On the Brazilian coast, a daring mutiny, excited by his officers, compelled him to resort to the extremity of putting on shore the three ringleaders, who were actually the persons named to succeed him in command, in case of his death. Cabot explored the river La Plata and some of its tributaries, erected forts, and endeavoured to colonize the country. He sent to Spain, and solicited the permission of the Emperor Charles to effect his object; as also a supply of ammunition, provisions, &c., which request was favourably regarded.

Another expedition arrived in the Plata in the subsequent year, commanded by Diego Garcia. After some disputes with Cabot, Garcia quitted the country, but left behind him some of his followers, who were guilty of acts which incensed the natives. In consequence, the whole nation burst with fury on the feeble colony, and Cabot was compelled to put to sea. He returned to Spain in 1531, where he resumed his old office, and made several other voyages. In 1548 he resolved to return to his native country.

The throne of England was then filled by Edward VI., who, being very solicitous about maritime affairs, conversed with Cabot, and received from him some explanation about the variation of the compass, first noticed, or at least first particularly attended to, by our navigator. Edward granted him a pension of 250 marks a year (166*l.* 13*s.* 4*d.*),—a munificent reward in those days, and deservedly bestowed. He also made him Pilot Major of the kingdom. Cabot remained high in the young king's favour, and was consulted in all affairs relating to trade and navigation. The advice and influence of Cabot in directing an expedition to the north, opened to England the valuable trade with Russia: he was made governor of the company of merchant-adventurers, by whom the expedition was fitted out; and the instructions delivered by him to the commander, Sir Hugh Willoughby, evince good sense, knowledge, and humanity.

The journal of Stephen Burroughs, who was despatched as commander of a vessel in the Russian trade, in the year 1556, shows the character of Cabot in a very favourable light. Speaking of a visit to the vessel at Gravesend, before her departure, he says,—"the good olde gentleman, Master Cabota, gave to the poore most liberall almes, wishing them to pray for the good fortune and prosperous successe of the Serchthrift, our pinnesse."

In the reign of Mary, the maps and documents of Cabot were consigned to the custody of one William Worthington, who was associated with him in his pension in the year 1557. It is supposed that all Cabot's nautical papers were by these means either destroyed, or put into the possession of Philip of Spain, the husband of Mary: certain it is, however, that they are no longer to be found.

The time and place of Cabot's death are not known; although his friend Eden gives some account of it. Speaking of a mode of finding the longitude, he tells us, "Cabot, on his death-bed, tolde me, that he had the knowledge thereof, by divine revelation, yet so that he might not teache any man." We are told, however, by Eden, that he thought that "the good old man in that extreme age somewhat doted, and had not yet, even in the article of death, utterly shaken off all worldlye vaine glorye."

FAME, fame; thou canst not be the stay
Unto the drooping reed,
The cool fresh fountain, in the day
Of the soul's feverish need;
Where must the lone one turn or flee?
Not unto thee, oh! not unto thee.—MRS. HEMANS.

CASHMERE SHAWLS.

II.

Attempts to introduce the Cashmere Goat and the Shawl Manufacture into England.

The Cashmere goat is not confined particularly to the valley of Cashmere; but is found in various parts of Central Asia, between the Himalaya mountains and the Black Sea. The principal points in the most approved breeds of the Cashmere goat are large ears, slender and cleanly-formed limbs, horns slightly twisted, and, above all, a long, straight, silky, white fleece. The quantity of the down procured by each goat does not exceed a few ounces in weight; so that the cost of shawls manufactured from this substance must ever be high.

In a former article we gave an account of the mode in which shawls are manufactured in Cashmere from goat's down, as also a few particulars respecting the goat itself. We will now detail the circumstances under which attempts have been made to introduce this source of individual wealth into England.

In the year 1828, a gold medal was presented by the Society of Arts to C. T. Tower, Esq., of Weald Hall, Essex, for having reared a flock of Cashmere goats, and having had a shawl manufactured from their down, and on that occasion a paper, published by the Society, furnished some interesting facts on this subject. Unsuccessful attempts had been made in former years by two or three persons to obtain, through British interest in India, a few of the Cashmere goats, in order to ascertain whether the breed could be naturalized in this country, and the gold medal of the Society had, for some years, been offered with the same view, in order to keep the public attention fixed on the subject. It is to France, however, that we owe the first successful attempt to bring over the goats to Europe, and to rear them. Two agents, MM. Fernaux and Jaubert, were sent out by the French government, about twenty years ago, to Persia, for the purpose of making purchases of goats in the north-eastern provinces of Persia, and bringing them to Europe. A considerable number of these animals was procured, and although many of them died in their long and wearisome march to the Black Sea, and in their passage thence to France, yet a certain number survived, and were brought to Paris in the year 1823.

Mr. Tower, happening to be in Paris at the time of the arrival of the goats, succeeded in purchasing four of them, two males and two females, and in conveying them safely to his residence in Essex. In the park at Weald Hall the animals continued in health, and multiplied steadily, the number having increased to twenty-seven by the year 1828. The goats showed no impatience of cold, and were very healthy, requiring only the occasional shelter of a shed in very rough weather. In spring, summer, and autumn, they grazed like sheep, and were fed during winter with hay and refuse vegetables from the garden; but their favourite food was the *gorse*, (*Ulex Europæus*,) which they devoured eagerly, without being annoyed by its prickles.

The coat produced by these goats is a mixture of long coarse hair and of short fine down. The down begins to be loose early in April, and is collected easily and expeditiously by combing the animals two or three times with a comb such as is used for dressing horses' manes. A good deal of the long hair comes off at the same time, but this is afterwards carefully separated. The down produced by a male is about four ounces, and of a female two ounces. Two pounds of down, as it comes off the goat's back, is estimated as sufficient to make one shawl, fifty-four inches square, and it will therefore require ten goats, male and female, to furnish materials for one shawl. Mr. Tower, in 1828, had three shawls made of the down produced by his goats, the yarn being spun by Messrs. Pease, of Darlington, and the shawls being woven by Messrs. Miller and Sons, of Paisley. One of these shawls was examined by the Committee of Manufacture, of the Society of Arts, and was found to be superior to others made of the French shawl-goat down, taken from the progeny of the goats brought over from Persia. This shawl, together with a pair of the goats, were subsequently presented by Mr. Tower to his late Majesty, King William the Fourth, as a memorial of the success which had attended this attempt. In the year 1833 Mr. Tower, in a letter to the Society of Arts, speaks of the progress of his flock in the following terms:—

As to my flock of goats, I have to report most favourably of its increase in point of numbers, and good condition. I have now upwards of fifty, and should in fact have had considerably above sixty, had I not lost ten or a dozen early last summer, from the injudicious supply given to them, in my absence from home, by the party attending them, of large quantities, which proved too succulent, and caused a loss to the above extent, by diarrhœa. The very small produce of the pure Thibet wool rendered it almost hopeless (as the quantity has not been found to be increased in this country) that they could be made to pay as an article of profit. When it is considered, however, that the first crop of the Angora quintuples the quantity, and promises rather to improve the adaptation of it to the manufacture of shawls,

we have only to import the Angora females, and the object is attained, whether for cultivation in this country, or export to Australia.

From the foregoing details we may gather, that although the Cashmere goat appears able to thrive in England, yet the small quantity of down yielded by each goat will render the manufacture unprofitable as a commercial speculation. We turn, therefore, to the subject alluded to in the last sentence of Mr. Tower's letter.

Mr. Riley, a gentleman many years resident in New South Wales, directed his attention to the best means of establishing a growth of fine wool in that country; and in pursuance of this object he transported to that territory, in the year 1825 and 1828, two flocks of the finest Saxon sheep procurable in Germany. The result proved favourable, for the wools of New South Wales, derived from those flocks, became eagerly purchased by manufacturers who were able to appreciate their excellence. Encouraged by this success, Mr. Riley next contemplated the introduction into the colony of the Cashmere goat, anticipating a result both favourable to himself and ultimately advantageous to the country generally. The son of this gentleman thereupon directed his attention towards the purchase of some of the Cashmere goats which were known to be then existing in France, the result of the mission of MM. Ternaux and Jaubert.

Mr. Riley, on inspecting the flock of Cashmere goats under the care of M. Ternaux, found that the quantity of down on each goat was so extremely small—not averaging above three ounces—that he deemed the animal wholly unfit for the object in view. The project of sending over some of these goats to Australia was therefore abandoned. Mr. Riley, however, was recommended to visit the flock of M. Polonceau, at Versailles, a gentleman who has succeeded in introducing an important improvement in relation to this subject. M. Polonceau was among the first to purchase a chosen selection of the Cashmere goats brought over by Ternaux; and having accidentally seen an Angora goat whose hair had an extraordinary silky appearance, resembling long, coarse, but very soft down, the idea struck him that from these two varieties of goat there might result a third variety possessing in many respects the joint qualities of the other two. The Angora goats were a peculiar breed introduced into France a few years after the introduction of the Cashmere goat. M. Polonceau made the necessary arrangements for testing the correctness of the idea which he had formed; and he had soon the pleasure of seeing springing up around him a little progeny of Cashmere-Angora goats, whose coats contained a considerable quantity of long, fine, soft, and glossy down, in every respect fitted for the purposes of shawl-weaving. In 1826, the Société Royale et Centrale d'Agriculture de Paris, acquainted with the intesting result of M. Polonceau's flock, being at that time in the third generation; and considering that the down of this new race was more valuable than those of the East, and that it was the most beautiful filaceous material known, as it combines the softness of Cashmere with the lustre of silk, awarded him their large gold medal.

M. Polonceau sold four of his goats to the King of Wirtemburg, for the sum of 3400 francs; but as he was not willing at that time to dispose of any more of his flock, Mr. Riley returned to England without effecting any of his projected purchases. At a subsequent period, however, this gentleman succeeded in obtaining from M. Polonceau ten female and three male Cashmere-Angora goats, which were safely conveyed to England for shipment to Australia. We believe those animals were forwarded to their Eastern destination; and that it was intended, not only to rear this valuable variety of the goat, but also to produce another variety, intermediate between, or combining the joint properties of the Cashmere-Angora goat, and the common goat of Australia.

Mr. Riley's communication to the Society of Arts, at the time he received a gold medal for his importation of the Cashmere-Angora goats into this country was made we believe about the time when the goats were about to be shipped off to Australia; and as we are not acquainted with the result of this interesting experiment, we will state briefly a few particulars respecting the down, resulting from M. Polonceau's experience.

M. Polonceau has goats which have yielded as many as thirty ounces of down in one season, and he states that the whole of his herd produce on an average from twelve to twenty ounces each, thus showing the great advantages which this breed has over the pure Cashmere, which never yield more than four ounces, and frequently not more than two ounces of down per goat. M. Polonceau states that the Cashmere-Angoras are more robust and more easily nourished than the common goat, and that they are less capricious and more easily conducted in a flock. They prefer the leaves of trees, as do all other goats, but they thrive either on hay or straw, or green fodder, or in meadows. They also feed with equal facility on heaths, and on the most abrupt declivities, where sheep would perish. For the first year or two of M. Polonceau's experiment he thought it prudent to give them aromatic herbs from time to time, but he afterwards deemed a continuance in that course unnecessary. During the course of six or eight years he could never discover any particular disease to which the goats were liable, for they continued in robust health.

The down commences to grow on the goat's back in the month of September, and developes itself progressively until the end of March, when it ceases to grow, and detaches itself naturally, unless artificially removed. To collect the down, M. Polonceau waits for the period when it begins to detach itself, and then the locks of down which separate from the skin with little force are taken off by hand. The down is taken from the animals every three or four days. In general it first begins to fall from the neck and shoulders, and in the following four or five days from the rest of the body. The collection is completed in the space of eight or ten days: sometimes the entire down can be taken off at one time, and almost in an unbroken fleece. The whole of it can also be removed from the animal at one shearing when it begins to loosen. The shearing has the advantage of preserving more perfectly the parallelism of the individual filaments, which much increases the facility of combing and preparing the down for manufacture.

Both as regards England, considered as a manufacturing country, and Australia, as a country whose resources are only just beginning to be developed, we deem the further prosecution of the experiments briefly detailed above to be a matter of considerable importance, and well worthy of the attention of those who are favourably placed for prosecuting them.

WE are but too apt to consider things in the state in which we find them, without sufficiently adverting to the causes by which they have been produced, and possibly may be upheld. Nothing is more certain than that our manners, our civilization, and all the good things which are connected with civilization, have, in this European world of ours, depended for ages upon two principles; and were indeed the result of both combined; I mean the spirit of a gentleman and the spirit of religion. The nobility and the clergy, the one by profession, the other by patronage, kept learning in existence even in the midst of arms and confusion, and whilst government were rather in their causes than formed. Learning paid back what it received to nobility and priesthood, and paid it with usury, by enlarging their ideas, and by furnishing their minds.—BURKE.

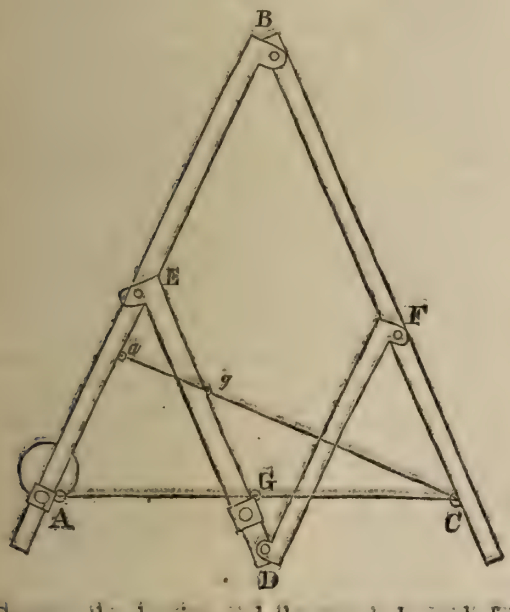
THE PANTOGRAPH.

THE Pantograph is an ingenious and useful instrument, employed by architects, draughtsmen, surveyors, and others, for copying drawings, either on the same scale as the original, or in any given proportion to it, larger or smaller.

If we have a representation—say, of a building; and wish to make another copy of it on a separate piece of paper, and on a similar scale, we can do so by the aid of ordinary drawing instruments, such as a scale of inches and parts of an inch, a pair of compasses, a protractor or sector for measuring angles, a parallel-ruler, a square, &c. But, when a copy is to be made, for instance, only one-half or one-fourth the size of the original drawing, the difficulty becomes much increased, because every line, long or short, vertical, horizontal, or diagonal, must be reduced in the just proportion. It is to meet such cases as these, that the instrument called a PANTOGRAPH has been invented; its name is derived from the Greek, and implies a *universal describer;* and we proceed to the principle on which this instrument acts.

A B, B C, D E, D F, (fig. 1,) are, respectively, four straight rods, jointed or hinged together at the corners in such a manner as to form a parallelogram, B F D E, all the angles of which are capable of altering with a very slight moving force. The joints are made with great care, in order that one ruler or rod may slide round on the other with ease and regularity. In instruments of the best construction, there is a small metal cock screwed to the lower bar of each joint, which supports the upper end of the axis upon which it turns.

Fig. 1.



Suppose the drawing, and the copy to be made from it, to occupy separate pieces of paper; then the two papers are laid flat down on a table, side by side, and the instrument is made to traverse the surface of both of them; a pointed tracer being made to pass over and along every line in the original draught, and a pencil being at the same time employed in drawing similar lines on the copy-paper. The intention of the instrument, then, is to produce lines, by the pencil, exactly similar in position, and bearing a certain fixed proportion, to the lines followed by the tracer. These purposes are effected in the following ingenious manner.

At the point C, in the bar B C, is fixed a small tube, intended for the reception of a tracer or tracing-point; the tracer being so fitted into the tube as to move freely within it, but without shaking. The bars A B and D E are each provided with tubes, shaped somewhat similar to that at C, but attached to a little apparatus which is capable of sliding along the bar, and of being screwed firmly to it at any desired part of its length. The difference between the tube at C and those at G and A is, that the former is for the reception of a tracing-point, and each of the latter for the reception of a pencil; also, that the former is fixed, while each of the latter is moveable along the bar to which it belongs. The pencil, placed in one of the tubes G, A, has frequently a little cup at the top, for the reception of weights to keep the pencil down upon the paper when the instrument is in use. The circular piece seen at A is a flat leaden weight with a brass stem rising from it, which fits in the tubes, in the same manner as the pencil or the tracing-point. This leaden weight has three or four fine points on its under surface, to keep it from shifting upon the paper: and under whatever tube it is placed, it forms a fulcrum, round which the whole instrument moves. The little weights in the cup at the top of the pencil keep the latter pressing down upon the paper, in a position to make a pencil mark whenever the instrument is moved; but, whenever it is desired to lift the pencil from the paper, it can be effected by the following means:—A silk cord is attached to the pencil stem, carried through eyes made for the purpose at the joints E, B, and F, and fixed in a notch at the upper part of the tracer; so that when the silk cord is pressed down by the thumb, the pencil is immediately lifted from the paper.

Such being the arrangement of the instrument, let us assume that the drawing is to be copied on the same scale as the original, all the lines of the one being of the same length as the corresponding lines of the other. Then, the point C, where the tracer is placed, being permanent, the two tubes A and G are slid along their respective bars until the points A, G, and C are all in a straight line, and the distance A G is equal to the distance C G, that is, until the tube G is exactly midway between A and C. The pencil is then fixed in the tube A, and the leaden weight is attached to the tube G. In this mode of arrangement, every part of the instrument revolves round G as a centre, the tracer C passing in contact with the lines of the drawing, and the pencil passing over the paper which is to receive the copy. Then whatever line the tracer C be made to pass over, the pencil at A will make a similar and equal line. That the line will be equal is demonstrable from the mathematical construction of the instrument; for, if the line B E be in the first instance equal to D E, and D E be equal to B F, then B E D F is a parallelogram, and will remain so, however the four angles may be altered. In our diagram B and D are acute angles, and E F obtuse; but, if the reverse of this were the case, the whole figure would still form a parallelogram. Neither is it necessary that all four sides should be of equal length; for if *opposite* sides are equal, *i.e.*, B E equal to D F, and D E equal to B F, the parallelogram will still be preserved. It would be somewhat tedious to follow out the mathematical reasoning by which it is shown that the lines drawn by the pencil are equal in length to those gone over by the tracer; but it will not be difficult for a reader, who knows a little of geometry, to trace the consequences, first, of the parallelism of the opposite bars of the frame B E D F, and, secondly, of the position of the fulcrum G, half-way between the tracer C and the pencil A.

In the next place, we will assume that the copy is to be exactly one-half the dimensions of the original drawing. The arrangement of the instrument will then be such as is represented in our diagram, where the leaden weight, which constitutes the fulcrum—or rather indicates the position of the fulcrum—is attached to the arm A B at the point A, instead of being attached at G. The fulcrum and the pencil have, in fact, changed places, without any change being made in the relative distances of A from G, and of G from C. The instrument, turning

round A as a fulcrum, leads to this necessary result, that the point G, to which the pencil is attached, moves through only one half of the space which the point C traverses in consequence of the distance being only half as great from A as C is from A. Whatever length of line, therefore, the tracer C passes over, the pencil G will describe a line of just half that length. Here, then, the required effect is produced;. for the maintenance of parallelism in the opposite bars is just as certain here as in the former case; and the copy resulting from the action of the instrument will exactly resemble the original, on a scale one-half the size. It is necessary to observe, however, that, when the pencil is between the fulcrum and the tracer, as in the present instance, the copy is seen in the right direction or position; but, when the fulcrum is between the pencil and the tracer, as in the former instance, the copy is reversed, the right hand side of the original being represented at the left hand side of the copy, and *vice versâ*.

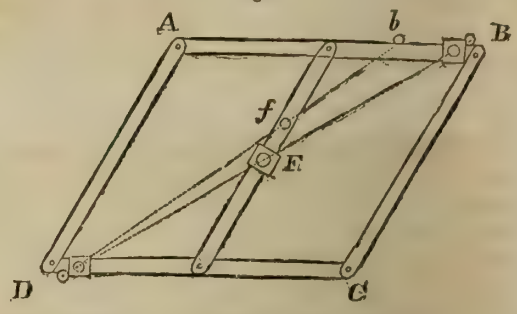
As a third example of the action of the instrument, let us suppose that the copy is to be on a scale only one-fourth of that of the original; in such case the pencil G will still be between the fulcrum and the tracer, but both pencil and fulcrum will be moved and adjusted to different positions on the bars to which they respectively belong. The adjustment must be such, that while C, *g*, and *a*,—the tracer, the new position of the pencil, and the new position of the fulcrum,—are all in a right line, the distance from *a* to C shall be four times as great as the distance from *a* to *g*; or, which amounts to the same thing, the pencil shall be only one-fourth as far distant from the fulcrum as the tracer is. Bearing in mind what has been before stated, it will be understood that all the lines which are drawn by the pencil will now be just one-fourth of the length of the corresponding lines in the original.

Any other proportion may be chosen in a similar way, and the instrument adjusted to that proportion by this formula;—As the distance of the pencil from the fulcrum is to the distance of the tracer from the fulcrum, so is the size of the copy to that of the original. But in using the pantograph it is seldom necessary to make any calculation in this respect; for the arms to which the pencil and the fulcrum are attached are so graduated as to comprise all the proportions likely to be required in practice.

The instrument is supported on six castors, one under each joint, which move freely over the surface of the paper, and give the joints a facility of adjusting themselves to the motion of the pencil. But, however carefully the instrument may be made, it is difficult to use, on account of these numerous joints and castors, which, while they make the instrument heavy for the hand, also render it difficult to mark the minute and gently curving lines, which often require to be copied.

To remedy in some respects these defects, a pantograph has been constructed of the form represented in the annexed cut (fig. 2.) Here we see five bars, moving freely on each other by means of six joints. F is the fulcrum, attached to the central cross-bar, and capable of sliding along it to any one of a scale of divisions engraved on the bar. D is the tube which carries the tracer, and B a moveable tube carrying the pencil. Then, supposing a copy has to be made the exact size of the original, the fulcrum is screwed down exactly at the centre of the cross-bar, as in the diagram; and the pencil B is so adjusted that D F and B shall all be in one straight line. The construction of the instrument involves, as a consequence, that the fulcrum will be exactly midway between the other two points; and, as a second consequence, that the lines drawn by the pencil shall be just as long as those gone over by the tracer. If the copy is required to be only half as large as the original, the fulcrum F is slid up to *f*, twice as far from the bottom of the bar as from the top; and when the pencil B is adjusted to the position *b*, where it will be in a right line with D and *f*, then the distance *f b* will be equal to one-half the distance *f* D, and the lines of the copy will be only one-half as long as the corresponding lines of the originla.

Fig. 2.



It is obvious at a glance that this instrument is more simple in its construction than the former, principally from the circumstance that the fulcrum is always attached to the central bar. When the copy is to be of the same size as the original the fulcrum is fixed midway between the tracer and the pencil; when it is to be larger than the original, the fulcrum is to be nearer to the tracer than to the pencil; when smaller than the original, the fulcrum is to be nearer to the pencil than to the tracer.

Our home is not in this mortal clime.
Our life hath not its bounds in time;
And death is but the cloud that lies
Between our souls and paradise.

MANY persons deprecate the study of the older authors on scientific subjects, as a waste of time and mental energy. To a certain extent, this is correct. To seek in them for that knowledge which they had no means of attaining, would be obviously absurd. No one expects to find a microscopical description of the tissues of the organized body before the era of the invention of that instrument. But it will often occur that men of original views suggest thoughts which they have no power of following out,—which, are, in fact, in advance of their time; and these may be profitably taken up at a subsequent period. Moreover in those departments in which the phenomena are constantly presenting themselves to inspection, an acute observer will frequently seize almost intuitively the essential details, and transmit to posterity accounts of them which may be highly valuable as bases for further inquiries. Thus the descriptions of diseases, founded on symptoms alone, left us by Hippocrates, were probably not surpassed by those of any other physician down to the time of Sydenham; and the descriptions of various species of animals, including not merely their external form, but their internal structure, which were drawn up under the direction of Aristotle, if not actually by him, would, if attended to by subsequent naturalists, have saved them from many errors, some of them egregious ones. We by no means recommend the study of bygone authors to those who desire merely to acquaint themselves with the present state of the science they are pursuing; since to them it would be generally a misemployment of time. But on those who are pursuing the path of original inquiry in any department upon which the means of investigation were within the reach of their predecessors, we would urge a careful research into their contributions, whether of fact or opinion, as a matter of interest as well as of duty. They will frequently thus be able to start from a more advanced position; they will often receive valuable assistance in their progress; and, when they have completed their work, they will be able to reply more successfully to the attacks of those who represent their discoveries as "nothing new."—*British and Foreign Medical Review.*

LONDON:
JOHN WILLIAM PARKER, WEST STRAND.
PUBLISHED IN WEEKLY NUMBERS, PRICE ONE PENNY, AND IN MONTHLY PARTS, PRICE SIXPENCE.
Sold by all Booksellers and Newsvenders in the Kingdom.

THE

Saturday Magazine.

No. 580. JULY 17TH, 1841. {PRICE ONE PENNY.

THE SPANISH TINKER, FROM MURILLO.

MURILLO AND HIS WORKS.

II.

THE most interesting period in the life of a man of genius, is that which includes the struggles of his earlier years; we follow him through all the difficulties of his career, and our sympathy is so much excited that we almost feel our own destiny to be united with his. We rejoice at his success; sorrow at his hopes deferred; but we experience a feeling somewhat akin to disappointment, when, having attained the object of his desires, his life moves on unchequered. We sigh for more adventures; and because we look for the false excitement of romance in the soberness of biographical truth, we often cease to be interested in the remaining chapters of a life which no longer deals in stirring events.

The "gentle Murillo" appreciated too well the pleasures of calm and studious retirement to furnish the materials of personal narrative to his biographer. Our artist having attained that distinction which he merited, has recorded his life in his works, and to them we must now refer for the completion of our sketch; but so numerous are the pictures of this great man, that the notice of a very brief selection must suffice: the reader, at all interested in the subject, will not find it difficult to obtain a view of several of Murillo's pictures contained in many of the Galleries of England, especially Dulwich Gallery, which is open to the public by means of tickets furnished gratuitously at the principal print shops.

It is probably a consequence of not studying in Italy that a national peculiarity of air, habit, and countenance, pervades all the pictures of Murillo: nothing of the academy is to be discovered in his groupes; all his Madonnas and Saints have the Spanish cast of features; and though he adopts a beautifully natural expression, yet there is generally a peasant-like simplicity in his ideas, holding a middle place between the vulgarity of the Flemings, and the elegant taste of the Italians. In his rustics we behold life itself, with a minute attention to costume. Many of his figures of the Saviour are of magic lustre and transparency of hue; but still there is a certain cast and expression of features which appear strikingly provincial to any one to whom Andalusian countenances are familiar. His Baptist and his Saints, particularly San Francisco Xavier, are noble and often sublime pictures; but the sublimity of Murillo neither forces nor enlarges nature; truth and simplicity always prevail; the painter presents what he sees, and not what he conceives. Herein he is distinguishable from his preceptor Velasquez; that great master, by his courtly habits and intercourse with the great, contracted a more proud and swelling character, to which the simple and chaste pencil of Murillo never sought to aspire; a plain and pensive cast, sweetly tempered by humility and benevolence, marks his canvass; and wherever his characters are impassioned, it is by the zeal of devotion—never by the guilty passions*.

One of the finest pictures of Murillo, viz., San Thomas, of Villa Nueva, distributing alms to the sick and the poor, was exhibited a few years ago at the exhibition of the Society of British Artists.

This fine picture (says Dr. Waagen) was formerly in the Church of the Franciscans, at Genoa. It is of the second period of the master, in which, after his return from Madrid with a lively recollection of the pictures of Velasquez, he united great fidelity to nature in the design, and precision in the single forms. The subject was a peculiarly happy one for Murillo. In the head of the saint, in which priestly dignity and gravity are admirably expressed, he has proved how equal he was to such religious subjects, from the legends of the monkish saints. The cripples and the sick afforded him, on the other hand, an ample field to show his skill in representations from common life, which we so highly admire in his beggar boys. The calm intellectual action of the saint forms a striking contrast with the lively excitement of the distressed, whose whole consciousness is concentrated in their eagerness for the momentary satisfaction of their bodily necessities.

Murillo appears never to have quitted Spain,—he did not even make a second journey to Madrid: he was so much averse to pretension and display, that by the time he had attained his fifty-seventh year, his productions were scarcely known in that courtly city. But, in the year 1670, one of his pictures was exhibited there in the great procession of Corpus Christi, to the admiration and surprise of the whole court and city. The King, Charles the Second, invited Murillo to Madrid, and promised to appoint him one of the royal artists. But Murillo, whose love of retirement and attachment to his native city of Seville could not be superseded by any considerations of interest or ambition, excused himself from the proposal on account of his age. He was then requested to send to Court some specimens of his performances, equal in merit to the picture he had exhibited at the solemnity before mentioned, and was promised munificent rewards if he accepted the commission. Murillo could oppose no absolute excuse to this request, but at the same time evaded an immediate compliance by requiring a longer space of time for executing the commission than the impatience and curiosity of the king could dispense with. His majesty, therefore, employed an agent to buy up the pictures of Murillo, and thus some of the finest works of this artist found their way into the royal collection.

Murillo contributed largely to the adornment of the churches of his country. Among others, there is a fine picture at Seville, in the Christening Chapel of the Church of the Miraculous Paduan, representing the Saviour and St. Antonio under a glory of cherubims, the back ground giving the perspective of part of a temple; and by the side of the saint is a table on which is placed a jar with lilies, so accurately represented, that the monks relate the story of a small bird attempting to rest upon the flowers, to pick the seeds; a compliment which has often been paid to many an inferior artist, but which the monks enlarge upon with rapture. But, in the present case, it would be unfortunate if the fame of Murillo depended at all upon such a trifle, because the whole back ground of this picture, including the lilies, was put in by Valdez, a cotemporary artist.

To Murillo also is due the five grand compositions, exhibiting different periods in the life of Jacob. These pictures were originally in the collection of the Marquis de Villamaurigne. The first design was to embody the life of David with the landscapes or back grounds, by Ignacio Iriarte, of Seville, who excelled in that branch of the art. Murillo desired Iriarte to paint the landscapes, and he would afterwards add the figures: Iriarte, on the other hand, contended for Murillo's placing the figures before he filled up the back grounds:—to remedy this difficulty, Murillo executed the whole without Iriarte's assistance, taking Jacob's History instead of David's.

The character of Murillo and the termination of his life, are thus described by Mr. Richard Cumberland.—

Murillo was in his person graceful, of a mild and humble deportment, and an expressive handsome countenance; to the allurements of interest or ambition he was equally insensible; he resisted, as we have seen, the offers of Charles, and at his death was found possessed of one hundred rials, which he had received the day before, and sixty dollars in a drawer: he was in his seventy-third year, when mounting a scaffold to make a painting of St. Catherine, for the convent of Capuchins, at Cadiz, he fell and bruised himself so much as to bring on a violent increase of a disorder which already existed; but such was the delicacy of his nature, that being unwilling to expose his infirmity to the examination of a surgeon, he suffered in silence; and, after some days' anguish, a mortification taking place, with perfect composure he resigned a life, tinged with no other excess, but that of an inherent modesty, to which, having repeatedly sacrificed what is generally esteemed most valuable in life, he lastly gave up life itself.

* See CUMBERLAND'S *Anecdotes of Eminent Painters in Spain.*

THE PHILOSOPHY OF A PEG-TOP.

We trust that our young readers will not be disposed to spin their tops with less zest when we assure them that this toy presents a very difficult problem to the Natural Philosopher: that the theory of its motions has engaged the attention of very eminent men, and that the questions arising therefrom are by no means satisfactorily answered. The boy who loves his peg-top because it is an ingenious toy, will, we hope, be taught by the present article to regard it with a higher degree of interest; and the man (if such there be) who despises the peg-top because it is a toy, will have an opportunity of learning that much philosophy may be gathered from childish things.

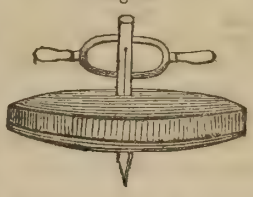
The simple contrivance whereby a top is set spinning, need not be particularly described. The string which is wound round the top and suddenly uncoiled with a jerking kind of action, has the effect of imparting circular motion to the top. Now circular motion is always the result of two forces, one of which attracts the body to the centre around which it moves, and hence is called the *centripetal* force; and the other impels it to move off in a right line from the centre, and this constitutes the *centrifugal* force. In all circular motion, these two forces constantly balance each other: if it were not so, the revolving body must evidently approach the centre of motion or recede from it, according as one or the other force prevailed. This is well illustrated by the action of a sling. When a stone is whirled round in the sling, a projectile force is imparted to the stone; but it is prevented from flying off on account of the counteracting or centripetal force of the string; the moment, however, that the string is unloosed, the stone ceases to move in a circle, but darts off in a right line; because, being released from confinement to the fixed or central point, it is acted on by *one force only, which always produces motion in a right line.*

We need scarcely inform our young reader that it is impossible for him to set up his top so that it shall stand steadily on its point without spinning it. He can never keep the line of direction within its narrow base: but when the rotating motion is once established, there is no difficulty in preserving it for a time in its erect position. Why is this? When a top is spinning we have an example of circular motion round a central axis; and the more rapidly the top spins, the greater is the tendency of all its parts to recede from the axis; or, in other words, the greater is the centrifugal force: the parts which thus revolve may be regarded as so many powers acting in a direction perpendicular to the axis; but as these parts are all equal, and as they pass with great rapidity round the axis, the top is in equilibrio on the end of its axis, or point of support, and thus its erect position is maintained. But the top soon falls, on account of two great impediments to its motion; viz., the friction of the peg on the ground, and the resistance of the air. If the top could be made to revolve on a point without friction, and in a vacuum, it would continue to revolve for ever, and always maintain the same position. But as it is impossible to comply with these two conditions, let us see what results have followed the attempts to reduce the retarding forces as much as possible.

About the middle of the last century Mr. Serson contrived a top, which, instead of the usual pear shape of the common peg-top, presented a horizontal surface similar to what we should obtain by piercing the centre of a disk of wood with an axis or peg. The upper surface of this top was polished, and it presented, while spinning, a true horizontal plane. It continued to spin for thirty-five minutes. On being spun (after the manner of spinning a humming-top), on the table of an air-pump, it was covered with a glass receiver, from which the air was then removed, and the top continued to spin during the space of two hours and sixteen minutes.

Mr. Roberts, of Manchester, a few years ago made a top which would spin in the air forty-two minutes. He made another top, and, in order to give it a neat appearance, covered it with lacquer; when he found it would not spin more than seventeen minutes; he removed the lacquer, and the top continued to spin as long as at first. He found that the lacquer, although it improves the appearance of surfaces, yet it imparts to them a vast number of minute roughnesses, scarcely, if at all, appreciable by the touch, yet sufficient to offer so much additional resistance to motion in the air.

Fig. 1.



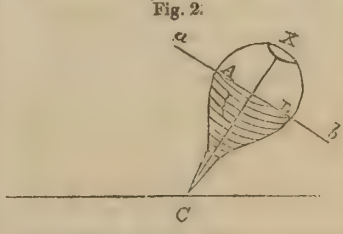
The accompanying figure represents a top made by Mr. Evans, of Swansea. Its shape is that of a disk of about four and a half inches in diameter, but rather thicker at the centre than at the edges: the central part through which the spindle passes is about an inch in thickness; and at the edge the thickness is about five-eighths of an inch. The top is put in motion like a common humming-top, by means of a yard of cord passed through the hole in the upright spindle. A rim of lead passes round the top and is inserted to the depth of about three-fourths of an inch. The steel peg on which the top spins is about seven-eighths of an inch long; it is not brought to a very fine point, because, in spinning, it is apt to drill a hole through the surface upon which it is placed. The spindle or axle is of wood, and nearly two inches long: the cord is wound tightly round this spindle; one person holds the two handles firmly, and a second draws out the cord to its full length. The cord should not be drawn out too rapidly at first, but with a speed gradually increasing. The best surface to spin it on would probably be a small agate cup, but, in the absence of this, we may employ a plate or saucer, over which a little oil has been rubbed. Mr. Evans says, "that by a simple contrivance, namely, sticking a knitting-needle through a reel of fine cotton, containing 250 yards, and attaching it to the top at full speed, I have been enabled to ascertain to a great nicety the speed of mine that spins forty minutes; the cotton was run off the reel in somewhat less than one minute; and from frequent trials, I find it makes no less than 4500 revolutions in the minute."

We will now return to the common form of the peg-top, and endeavour to explain the means by which the top is enabled to rise from the oblique position (which it always more or less assumes when first set spinning,) into the truly vertical position which produces the effect called *sleeping*, where the motion is so steady that it scarcely seems to move.

When the top is *sleeping*, its centre of gravity is situated perpendicularly over its point of support; but, in rising from an oblique to a vertical position, the top must have its centre of gravity raised. The force which effects this change has been a subject of contest in the philosophy of the peg-top, and we believe that Dr. Paris was the first to offer a satisfactory explanation thereof. He considers it to depend upon the form of the extremity of the peg, and not upon any simple effect connected with the rotatory or centrifugal force of the top. If the peg were to terminate in a fine, that is to say, in a mathematical point, the top never could raise itself.

Let A, B, C, (fig. 2,) be a top spinning in an oblique position, having the end of the peg C on which it spins brought to a fine point. It will continue to spin in the direction in which it reaches the ground, without the least tendency to rise into a more vertical posi-

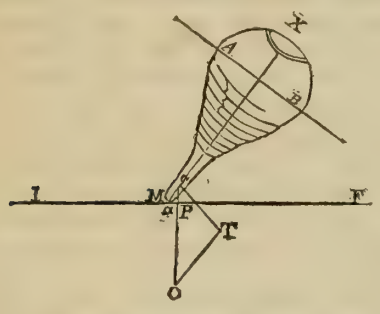
Fig. 2.



tion, and it is by its rotating or centrifugal force that it is kept in this original position: for if we conceive the top divided into two equal parts, A and B, by a plane passing through the line X C, and suppose that at any moment during its spinning the connexion between these two parts were suddenly dissolved, then would any point in the part A fly off with the given force in the direction of the tangent, and any corresponding point in the part B with an equal force in an opposite direction; whilst, therefore, these two parts remain connected together, during the spinning of the top, these two equal and opposite forces, A and B, will balance each other, and the top will continue to spin on its original axis. Hence the rotating or centrifugal force can never make the top rise from an oblique to a vertical position.

But in order to be satisfied that the change in position depends on the bluntness of the point, let A B C (fig. 3), be a top spinning in an oblique position terminating in a very

Fig. 3.



short point with a hemispherical shoulder P *a* M. It is evident that in this case, the top will not spin upon *a*, the end of the true axis X *a*, but upon P, a point in the circle P M to which the floor I F is a tangent. Instead, therefore, of revolving upon a fixed and stationary point, the top will roll round upon the small circle P M, on its blunt point, with very considerable friction, the force of which may be represented by a line, O P, at right angles to the floor I F, and to the spherical end of the peg of the top: now it is the action of this force, by its pressure on one side of the blunt point of the top, which causes it to rise in a vertical direction. Produce the line O P till it meets the axis C; from the point C draw the line C T perpendicular to the axis *a* X, and T O parallel to it; and then, by a resolution of forces, the line T C will represent that part of the friction which presses at right angles to the axis, so as gradually to raise it in a vertical position; in which operation the circle P M gradually diminishes by the approach of the point P to *a*, as the axis becomes more perpendicular, and vanishes when the point P coincides with the point *a*, that is to say, when the top has arrived at its vertical position, where it will continue to *sleep* without much friction, or any other disturbing force, until its rotatory motion fails, and its side is brought to the earth by the force of gravity.

There can be no doubt that this explanation is correct, and however difficult it may appear to the general reader, yet it is worthy an attentive consideration. The following remarks by Dr. Arnott will greatly tend to illustrate and simplify the theory of Dr. Paris.

While the top is quite upright, the extremity of its peg, being directly under its centre, supports it steadily, and although turning so rapidly, and with much friction, has no tendency to move from the place; but if the top incline at all, the *edge* or *side* of the peg, instead of its very *point*, is in contact with the floor, and the peg then becoming as a turning little roller, advances quickly, and describes a curve somewhat as a skaiter's foot does, until it come directly under the body of the top as before. It thus appears that the very fact of the top inclining, causes the point to shift its place, and to continue moving until it come again directly under the centre of the top. It is remarkable that even in philosophical treatises of authority the standing of a top is still vaguely attributed to *centrifugal force*. And some persons believe, that a top spinning in a weighing scale, would be found lighter than when at rest; and others most erroneously hold that the centrifugal force of the whirling, which of course acts directly away from the axis, and quite equally in all directions, yet becomes, when the top inclines, greater upwards than downwards, so as to counteract the gravity of the top. The way in which centrifugal force really helps to maintain the spinning of a top is that when the body inclines or begins to fall in one direction, its motion in that direction continues until the point describing its curve, like the foot of a skaiter, has forced itself under the body again.

The gyrations of the peg-top depend upon the same principle as that which produces the precession of the equinoxes; viz., an unequal attractive force exerted upon the revolving mass. In the one case, this is known to arise from the action of the sun and moon on the excess of matter about the equatorial regions of the earth; in the other, from the parts of the top being unequally affected by gravity while it is spinning in an inclined or oblique position. Sir John Herschel says:—

The precession of the equinoxes consists in a real, but very slow motion of the pole of the heavens among the stars, in a small circle round the pole of the ecliptic. Now this cannot happen without producing corresponding changes in the apparent diurnal motion of the sphere, and the aspect which the heavens must present at very remote periods of history. The pole is nothing more than the vanishing point of the earth's axis. As this point, then, has such a motion as described, it necessarily follows that the earth's axis must have a conical motion, in virtue of which it points successively to every part of the small circle in question. We may form the best idea of such a motion by noticing a child's peg-top, when it spins not upright, or that amusing toy the te-to-tum, which when delicately executed, and nicely balanced, becomes an elegant philosophical instrument, and exhibits in the most beautiful manner, the whole phenomenon, in a way calculated to give at once a clear conception of it as a fact, and a considerable insight into its physical cause as a dynamical effect.

The following ingenious and useful remarks we borrow from Dr. Paris.

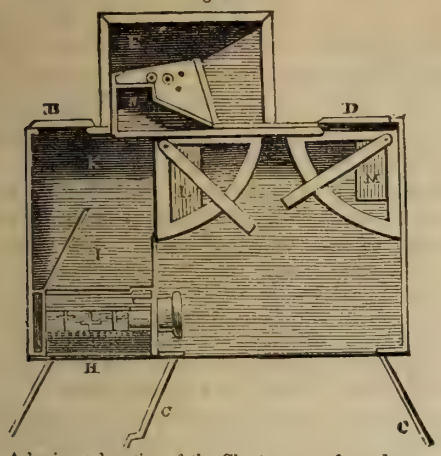
If a top could be made to revolve on a point without friction, and in a vacuum, in the case of its velocity being *infinite*, it would continue to revolve for ever, in the same position, without gyration. If the velocity were *finite*, it would for ever remain unchanged in position, in the event of the centre of gravity being directly over the point of rotation. In any other position (supposing its velocity very great, although not infinite) there would arise a continued uniform gyration, the line which passes through the point of rotation and the centre of gravity always making the same angle with the horizon, or describing the same circle round the zenith. But in all artificial experiments the circumstances are very remarkably changed; if, indeed, the centre of gravity happens to be situated perpendicularly over the point of rotation, the top will continue quite steady, or *sleeping*, as it is termed, till nearly the whole of its velocity of rotation is expended. In any other position the top begins to gyrate, but reclining at all times on the outside of its physical point of gyration, the top is uniformly impelled inwards, and this, (when the velocity is considerable, and the point broad,) acts with force sufficient for carrying the top towards its quiescent or *sleeping* point; but when the velocity is much diminished, this power becomes feeble, the gyrations increase in diameter, and the top ultimately falls.

As the peculiar office of man is to govern and defend society; that of woman is to spread virtue, affection, and gentleness through it: she has a direct interest in softening and humanizing the other sex. Man is too rugged to be even just towards those whom he only loves, but does not respect: he is too powerful to be swayed by those whom he only respects, but does not love. The empire of woman must be won, not solely through his sense of justice, but by the grace and delicacy, the tenderness and purity she diffuses through life; but her rights will neither add dignity to her social influence, nor bring practical security to her domestic station, except as they are found really to promote the virtue and happiness of society.—*Woman's Rights and Duties.*

ON CHESS. No. XIV.

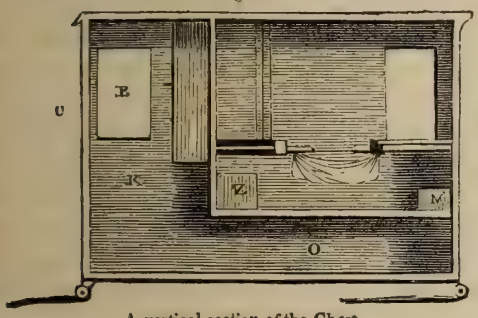
The Automaton Chess-Player. 2.

Fig. 3.



A horizontal section of the Chest, as seen from above.

Fig. 4.



A vertical section of the Chest.

We propose on the present occasion to describe the external appearance and the mode of performance of the chess automaton, as detailed by M. Windisch soon after its first introduction to the public. The reader will fancy himself a visitor to M. de Kempelen's study, as described in our last article.

The first object that catches the eye on entering this room is the automaton, placed opposite the door. The chest to which it is fixed is three and a half feet long, two feet deep, and two and a half feet high. It stands upon four castors, by which means it may be easily moved from one place to another. Behind this is a figure, the size of life, dressed in the Turkish fashion, seated in a wooden chair, attached to the chest, and which moves with it when it is wheeled about the room. This figure leans with its right arm upon the table, and in its left hand holds a Turkish pipe, in the attitude of a person who has just been smoking. It plays with its left hand,—a circumstance which the inventor says was due to his own inattention, and not discovered until the work was too far advanced to rectify it. "But what does it signify," asks Windisch, "whether Titian painted with his left hand or his right?" Before the automaton is a chess-board, screwed down to the table, to which its eyes are constantly directed. M. de Kempelen opens the front door of the chest and takes out the drawer at the bottom. The chest is divided by a partition into two unequal parts: that on the left hand is the narrower; it occupies little more than one-third of the chest, and is filled with wheels, cylinders, levers, and other pieces of clock-work. In that on the right are also seen some wheels, spring-barrels, and two horizontal quadrants. There is also a box, a cushion, and a tablet, on which are traced some characters in gold. The inventor takes out the box, and places it on a small table standing near the machine: he also removes the tablet, which is to be placed on the chess-board as soon as the game is over, to enable the automaton to answer such questions as may be put to him.

In the drawer above-mentioned are red and white chess-men on a board, with which they are taken out and placed on the side of the chess-board. There is also a small oblong box, containing six small chess-boards, each showing the end of a game. Any one of these situations being set up on the automaton's chess-board, he undertakes to win, whether he play with the red or the white men.

In showing the interior of the machine the inventor not only opens the front but also the back doors of the chest, by which the wheel-work becomes so exposed as to afford the most thorough conviction that no living being can possibly be concealed; and in order to make this exposure more complete, the inventor generally places a wax light in the chest, so as to illuminate every corner of it. He then lifts up the automaton's robe, and turns it over his head, so as to display the internal structure, which consists of levers and wheel-work, of which the body of the automaton is so full that there is not room to hide a kitten. Even his trousers have a little door in them, which is opened to remove even the shadow of suspicion.

M. de Windisch assures us that the inventor does not shut one door as soon as he opens another,—"no, you see, at one and the same time, the uncovered automaton, with his garments turned up; the drawer and all the doors of the chest open." In this state the inventor moves it about, and submits it to the inspection of the curious.

After allowing sufficient time to examine it closely he shuts all the doors, and places it behind a balustrade, which prevents the company from shaking the machine by leaning upon it while the automaton is at play, and leaves room for the inventor to walk about, and approach the cupboard on either side, but he never touches it except to wind up the works. He then introduces his hand into the body of the automaton, in order to arrange the movements properly, and concludes by placing a cushion under that arm of the automaton with which he plays.

The inventor places the little box (before spoken of) on a table near the machine: there is, however, no visible communication between the automaton and the table or the little box; but while the automaton is playing, the inventor frequently opens this box, to examine its contents, which are unknown to the company. It was generally supposed that this box was merely a plan calculated to distract the attention of the spectators, but the inventor assured M. de Windisch that it was so indispensable that the automaton could not play without it.

We are now prepared to see the machine play. When the automaton is about to move he lifts his arm leisurely, and directs it to the piece which he intends to play: he suspends his hand over it,—opens the fingers,—takes it,—places it on the proper square,—and again removes his arm to the cushion. In capturing a piece he first removes his adversary's man, and then substitutes one of his own. A slight noise of wheel-work, somewhat resembling that of a repeater, is heard during every move of the automaton. This noise ceases as soon as a move is made and the automaton's arm replaced on the cushion; and not till then can the adversary make a fresh move. The automaton always claims first move, and moves his head so as to look over the whole board whenever the adversary makes a fresh move. He nods his head twice when the adverse queen is attacked, and thrice when check is given to the king.

If the adversary makes a wrong move, the automaton shakes his head, returns the piece to the square from which it had moved, and then plays his move; so that the adversary loses his move as a punishment for his inattention or wilful mistake: this often happens, from a desire on the part of the player or the company present,

to see the automaton detect a mistake, and take advantage of it. This condition is one among others which facilitates the winning of games by the automaton.

The inventor requests those who play with the automaton to be careful to place the pieces exactly in the middle of the squares, lest the automaton in opening his hand to take the piece should miss it, or receive some damage. A move once made on either side is not allowed to be retracted.

The machine cannot make above ten or a dozen moves without being wound up again; but it is evident that the simple operation of winding up the springs of the arm of the machine can produce no other effect than that of restoring to it the *vis motrix*, without having any influence on its *vis directrix*. In this latter quality consists the principal merit of the machine, and here also lies the mystery: for the operation of winding up is the only one the inventor is seen to perform, and this the only time when he touches the machine. Mathematicians of all countries have examined it with the most scrupulous attention without being able to discover the least trace of its mode of operation.

I have frequently been in the apartment, (says Windisch,) where the automaton was at play, with twenty or thirty more persons, who kept their eyes rivetted on the inventor. We never saw him approach within two or three yards of the machine, nor do aught else than look occasionally into the box before mentioned; nor ever betray himself by the least motion which to us appeared capable of influencing the machine in any shape whatever.

To show also that magnetism has nothing to do with the movements of the chess automaton, the inventor permits any one to place the most powerful magnet on the machine.

The automaton also performs the feat of moving the knight over the sixty-four squares of the chess-board in as many leaps. One of the spectators places a knight on any square: the automaton immediately takes it, and observing the knight's peculiar move, begins at the square occupied by the knight, and causes the piece to cover the sixty-four squares in the same number of moves without missing one, and without touching one square twice: this is ascertained by one of the spectators putting a counter on each square he touches.

Such, then, is an account of the appearance and performances of the chess automaton, as exhibited soon after its first invention. We have given our description in the present tense, as being better calculated to afford the reader an idea of the extraordinary sensation caused by this very remarkable machine.

Of all his inventions M. de Kempelen prided himself least on his automaton chess player. He frequently spoke of it as a mere trifle, and though considering it merely as a machine, (without reference to the plan adopted for putting it in motion,) it certainly possessed some mechanical merit, yet that the greater part of the reputation it had acquired was owing to a happy deception.

M. de Kempelen was far from coveting the celebrity which his automaton obtained for him, nor did he desire that it should be considered as a prodigy. He wished it to be understood that the wonderful effects of his machine were due to a certain boldness of thought on his part, and a happy choice of means employed in the deception. He was unwilling to part with his secret, and refused considerable offers made to him by persons who hoped to make their fortune by exhibiting it. He even threw aside the automaton in order to devote his mechanical abilities to new researches and inventions of a more serious nature, and more calculated for public utility; and although frequently visited by travellers from different countries, who wished to see his famous automaton, he declined showing it, stating that it had received damage in being moved about from place to place. He had, in fact, partly taken it to pieces, and left it for some years in a dilapidated state, in which condition it would have remained, but for the following circumstance:—the Grand Duke Paul of Russia, with his consort, under the travelling titles of the Count and Countess du Nord, paid a visit to the Emperor Joseph the Second, at the Court of Vienna, who, wishing to gratify as much as possible his distinguished guests, bethought himself of de Kempelen's machine. In compliance, therefore, with the desires of his sovereign, de Kempelen got the automaton into working order within the space of five weeks. It excited the greatest surprise and admiration in the minds of the Count and Countess, who, as well as the principal nobility, advised the inventor to send it to some of the chief cities of Europe. The emperor approved of this plan, and gave de Kempelen leave of absence for two years for that purpose. The chess automaton was therefore despatched on its travels. In 1783 it first appeared at Paris with the greatest applause: it was beaten at chess by the professors at the Café de la Régence, but this circumstance by no means detracted from the merit of the machine, if such we may call it; nor did it tend to elucidate the mystery which was the grand cause of the excitement, which everywhere attended the presence of this automaton.

De Kempelen found the automaton so profitable an exhibition in Paris that he determined to visit London, where we hope to find him in our next article at No. 8, Savile Row, Burlington Gardens.

IN no province of science, in no part of the vast and diversified scenery of nature, are the various attributes of God more wonderfully and impressively displayed than upon the bright field of astronomy. In the contemplation of the brilliant scenery of the starry heavens, the man whose mind is stored with the rich and varied results of modern discovery has an advantage over those who are uninitiated into these sublime mysteries of nature, attended with correspondent obligations of piety and devout admiration. When an ignorant and uninstructed person looks up to the ethereal concave, he sees nothing but a vast canopy mantling the globe on which he dwells, and studded with so many spangling points. To him it is nothing but a scene of gay confusion, in which he can discover no law beyond that of a periodical appearance above the horizon, nor conceive any end suitable to the variety and the magnitude of the means which seem to have been employed. But the man of science sees with other eyes; he looks up to that glorious theatre of wonders, which has been spread above him and around him, with other notions, and, unless his mind be blinded by prejudice, and incased in impiety, he cannot fail to be led to other reflections. Where the untaught eye saw nothing but a promiscuous assemblage of twinkling lights, he beholds the most perfect regularity, harmony, and order. Where the ignorance of the former could perceive only the dispositions and arrangements of chance, his knowledge can trace the footsteps of the most consummate design. To his enlightened vision the speck enlarges into a world, and the spark swells into a luminary. While conducted by the hand of science, he ranges over the fields of ether, and follows the planets in their course; while he contemplates these vast bodies wheeling through the sky, under the influence of a combination of forces, which can be reduced to the laws of the most rigid demonstration, spinning each upon its own axis, and at the same time travelling with inconceivable velocity along its orbit; while he passes on from star to star, from system to system, the centre of one being probably only a planet moving with its attendant satellites around some more distant centre: and when the line of scientific observation having now failed him, his imagination takes the helm and conducts him among those remoter worlds, which as he advances are found to rise in thicker clusters over the face of the abyss; while he is engaged in this voyage of discovery, or rather in this tour of observation over the manifold works of God, at every step must be rising higher his conceptions of the power and majesty, of the wisdom and goodness of that Being, the very threshold of whose dominions he has scarcely been able to pass. Overwhelmed with the immensity and variety of the objects of his contemplation, he sinks down in the conscious acknowledgment of his littleness, and seeks repose to his wearied faculties in the homage of silent adoration.—DAVIES'S *Handmaid*.

BEET-ROOT SUGAR.

1. The Varieties and Cultivation of the Beet.

We often find that plans formed by individuals for the gratification of their own private ends lead to results which they little contemplated, and which frequently tend to the public good; thus, Bonaparte, influenced by bitter hatred towards England, strove to cripple her commerce by endeavouring to render France quite independent of the British colonies in obtaining a supply of the necessaries of life. One of his plans was to obtain sugar from *Beet-root*, and although the feeling with which this plan was prosecuted has long since passed away, yet the results of numerous experiments made in conformity with it belong to the cause of science, and can neither be forgotten nor despised.

Nearly a century ago, Margraf, a German chemist, found that sugar may be obtained from the white beet-root in greater quantity than from any other European plant. Achard and other experimentalists subsequently investigated the subject, with a view to determine the best mode of obtaining sugar from the beet. It will, therefore, be desirable to preface our notice of this branch of industry with a brief account of the principal varieties of the beet, in order to indicate the qualities in which the white variety differs from the others.

The botanical name for beet is *Beta*, so called from the resemblance which the plant is thought to bear, while the seed is swelling, to the form of the Greek letter β. It is ranked among the class *Pentandria*; order *Digynia*. There are three or four species, each of which presents several varieties. The *Beta cicla*, or common culinary beet, includes the common green-leaved beet, the large white beet, and the chard, or great Swiss beet. The *Beta major*, or *Great German Beet*, commonly called *Mangel-wurzel*, presents the dark-green-leaved, the light-green-leaved, and the red-veined-leaved varieties. Lastly, there is the *Beta rubra*, which includes the common red beet and two or three other varieties nearly allied to it. The principal features presented by these three species are the following:—The *Beta cicla* has a small oblong white root, producing from its crown many large, oblong, succulent leaves, on broad foot-stalks, and erect branching seed; stems two or three feet high, garnished with close setting leaves, and long spikes of greenish flowers, which are succeeded by plenty of ripe seed in autumn. The *Beta major* has a large, long, reddish, or sometimes whitish-red root; and very large, oblong, thick, succulent, leaves. The *Beta rubra* presents a large red eatable root, crowned by many large, oblong, reddish-purple leaves; and when it shoots, sends up erect stalks and branches, terminated by long spikes of flowers and seed.

The purposes to which these varieties of beet are applied, or rather, we should say, the modes in which they have been applied as food, are many. In some instances the root itself is cut up and eaten; in others, the stalks and mid-rib of the leaves are stewed and eaten like asparagus; in a third kind the leaves, being large and succulent, are occasionally used in the manner of common beet, and particularly to boil as spinach, or to put into soups. As food for cattle, the variety termed *mangel-wurzel* has been much used of late years; and the reader may frequently see, on the pier or quay of Hungerford market, immense heaps of this root, landed from barges and vessels, for the London market.

It does not form part of our plan to extend farther the notice of beet generally; but we shall now proceed to the consideration of the mode in which one particular variety of the plant is cultivated, for the production of sugar. The researches of Achard and Gottling have combined to educe a regular and systematic train of operations.

Achard recommends that the soil for the growth of the beet should be one in which wheat has been grown. A low situation, not exposed to great or lasting drought, is to be preferred. The ground should be ploughed thrice over, and as deep as the nature of the soil will admit. Immediately after the third ploughing, which should be done in April or the beginning of May, the ground is to be brought smooth by the harrow; and by means of a rake, whose teeth are distant from nine to twelve inches, lines are to be traced along the surface. Then, by drawing the rake in transverse lines across these, the ground becomes divided into squares, measured by the distances of the rake's teeth. Into each intersecting point of the lines thus drawn, one capsule containing several seeds is to be inserted, to the depth of an inch; a process which may be easily attended to by children. When the plants have germinated and six or eight leaves are formed, the ground must be weeded, and if the young plants be too much accumulated on a particular spot, the superabundant ones are to be pulled out. After the ground has been once cleared of the weeds, the plants grow up so speedily, that their leaves soon completely cover the ground; and thus absolutely prevent the growing of any more weeds. In consequence of this circumstance, an acre of ground cultivated with beet occasions no more trouble till the time of gathering; which circumstance greatly facilitates the cultivation, because the time of the cultivator, who is then busied in his corn harvest, is not required to be at all employed on this object.

Respecting the choice of seed, care must be taken that it be not obtained from roots which, after their germination, have been transplanted on seed-beds; but from such as remained on the spot where they grew from the capsules, till autumn, and which likewise have produced the true oblong, thin, conical roots, the best suited for preparing sugar. This is necessary, because the seed of untransplanted beet produces roots more partaking of the spindle form, which, as we have remarked, is that which has been found most profitable.

Among those varieties of the beet which have that shape of root deemed most favourable for the production of sugar, Achard enumerates four of different colours. Some have a pale red rind, and are internally quite white; others, with a rind usually of a deeper red, have internally reddish stripes; others again, of a more or less deep red, have red circles; and lastly, there are some which, with a rind almost white, have the internal parts yellow. These varieties have different degrees of value, in the preparation of sugar. That which is white, with a light red rind, deserves the preference above the others, yielding much sugar, and an agreeably sweet syrup. The red-striped or circled roots, whose rind is of a darker colour than the kind just spoken of, afford sugar; but the syrup is bad, on account of its retention of the taste of the root, which cannot be removed but by expensive chemical processes. Those with a white rind and yellow interior afford much crystallizable sugar; but are not calculated for the production of moist or raw sugar, on account of the exceedingly disagreeable taste of the syrup.

Achard made some very ingenious inquiries into the effect of *light* on the developement of a saccharine principle in the beet. It is known that asparagus becomes more sweet and pleasant to the taste when kept excluded from the light than when exposed to it. Endive, too, has a tough harsh-tasted leaf when exposed to the free action of light; whereas, when the inner leaves are defended, by tying the outer ones together, they change their colour, which passes from green to yellow; the firmness of their texture is weakened; they become tender, soft, brittle, and full of juice; and their taste, which was before exceedingly disagreeable, becomes mild and pleasant. Reasoning from these facts, he inquired, not only whether any particular principle, such as the saccharine, was affected by light, but also whether all parts of a plant were similarly affected, or whether differ-

ent members of the plant. His researches led him to these two conclusions:—1. That the absence of light augments the saccharine liquor in almost all roots, or in the genus arising therefrom; that its presence diminishes it; and that to shade the whole surface of a piece of ground, on which such roots are raised, adds very much to the increase of their saccharine matter. 2. That light has not the same effects on the different parts of the same plant; for, in the case of the *fruit*, so far from being influenced in the same way as the root, the saccharine matter is augmented by the presence of light, and, on the contrary, is not only retarded but diminished by the absence of light. As a further support of his opinion, he states that the upper parts of carrots, parsnips, beet, and other vegetables, which are not covered by the earth, lose the sweet taste naturally belonging to them; while the root, which is enveloped in the ground, possesses much of the saccharine principle.

The way in which Achard proposes to take advantage of these effects is, to shield as much as possible the beet root from the action of light during growth, and to expose the upper part of the plant freely to its influence, in order that the saccharine principle, naturally belonging to the plant as a whole, may settle down more and more completely in the root. It is for a similar reason, that he prefers the spindle-shaped roots to those of a more globular form, as being more likely to keep from the influence of light. Of the different varieties of root which were tried, Achard found sugar to result more abundantly from those which were of small size, and consequently had grown near one another; or whose heads had been buried underground; or which had flat heads, and therefore, from which the leaves had not been taken off; or, finally, which possessed a conical or spindle-shape, and had not been transplanted, but had received their full growth in the places where they germinated from seed. On the contrary it was found that only pulp and ill-tasted syrup were formed from roots which were strong and thick, and consequently grew at a greater distance from one another, or from those whose heads were large and round.

It therefore appears, that in order to produce roots which shall yield a remunerating quantity of saccharine matter, the plants should be planted with that degree of proximity to each other, that the leaves shall spread over the wnole surface of the ground, and form a kind of umbrageous canopy. These leaves are not to be cut until about the month of September or October, when the root itself is taken up.

The reader will then understand, that according to the experience of Achard, the cultivation of the beet for the production of sugar is not a difficult process, considered in an agricultural point of view; but that care is necessary to keep the root excluded from the action of light. The plant will then attain, by the month of October, the condition which is required for this purpose. We shall in another paper, therefore, trace the routine of processes by which the sugar is obtained from the beet-root.

HYMN.

God of Nature, God of love!
Seen below, around, above,
Traced in every varied form,
Heard in every awful storm;
Glorious in the noonday light,
Mild and beautiful in night;
Now, O bounteous Lord! to Thee,
Low we bend the suppliant knee.
'Tis thy goodness glows around,
Decks the fields, and clothes the ground;
'Tis thy breath, in gentle gales,
Sweeps along the dewy vales;
'Tis thy bounteous hand distils
Healthful waters from the hills;
To Thee, O God! our lives we owe,
And every blessing here below.

THE TRUE USE OF TALENT.

THERE can be no doubt that the great primary end, to which every man of talent should consider his powers, in whatever line of intellect or attainment they may predominantly lie, as solemnly and sacredly pledged, is the promotion of the glory of the great Author of his being. This was the very object for which such an order of mind was bestowed upon him, and proportioned to the superior energy and capability of that mind is unquestionably the force of the obligation by which he is bound to give its exertions a sound and salutary direction. This is the central point, to which every ray throughout the whole circle of human endowments should steadily and uniformly converge. It is true indeed that the object may be promoted in various ways—that it may be advanced by different habits and modifications of intellectual exercise. In establishing the glory of the Deity as the great standard to which all the efforts of the mind should be ultimately referred, there is no necessity that the faculties should be cramped in their exercises—that they should be confined in their attainments, partial in their application, and timid in their researches. With this object, on the contrary, their most unfettered developement—their most extensive and loftiest excursions, so far from being incompatible, are in the highest degree congenial. In the grand system of the moral universe, while the glory of its Author, as the sun, occupies the centre, there is range enough both for the flaming comet, which wheels through its distant round—still however paying the homage of a strict and undeviating gravitation—and for the milder planet, which appears to pursue a more regular and uniform course. Whatever may be the amount of the talents which any individual has received, there is abundant scope for their exercise, and for carrying on such a profitable negotiation in the varied intercourse of human society, as may enable him, on the great day of account while he feels himself to be at best an unprofitable servant, to return them, in the language of the parable, with usury to Him that gave them. As the scenes of nature are infinitely diversified—as its laws require to be investigated and its beauties to be displayed, by the exercise of appropriate powers of mind, and as the attributes of Deity admit of various modes of illustration, there is obviously opportunity afforded for the developement of every order of talent, and for the indulgence of every pure and well-regulated taste, while the end is still uniform and the same. Science, history, philosophy, poetry, and the fine arts may be cultivated in all their departments with all the enthusiasm which the most devoted adherent of these pursuits may desire, without any necessary dereliction of that primary design to which they must all be subordinate. The intellect may prosecute its researches and delight itself with the discoveries of truth; the judgment may arrange her materials and form them into trains of reasoning; the memory may accumulate her treasures and make still fresh additions to her stores; the imagination may embody her visions, and fancy may weave her garlands; while the eye of the mind is still firmly fixed upon that which gives a character of sacredness to every effort. All that is really wanted is simplicity of purpose and a sublime rectitude of aim. The spirit of man was never designed to be stretched upon a Procrustean bed, to the form and dimensions of which the elastic powers of the soul are to be rigidly adapted and measured. But while the mind may justly assert its native liberty of action—while it may refuse to have its kindling energies smothered beneath the choking layers of antiquated notions and predilections, and to shape its conceptions into a servile conformity to the model of prevailing and ordinary sentiment—while it is privileged to expatiate with freedom over the varied field of thought, there must still be a point with which it will be found to move in harmony. Though it may rise above the influences of earth, there must still be a luminary in the heavens—there must be a fixed, a never-varying regard to the glory, the majesty, the will and the purposes of its beneficent Creator, whose sway it must unreservedly own; and until it has been brought under this legitimate and salutary control it is as incapable of guiding itself aright as the fabled Phaeton of directing the chariot of the sun.—DAVIES's *Handmaid.*

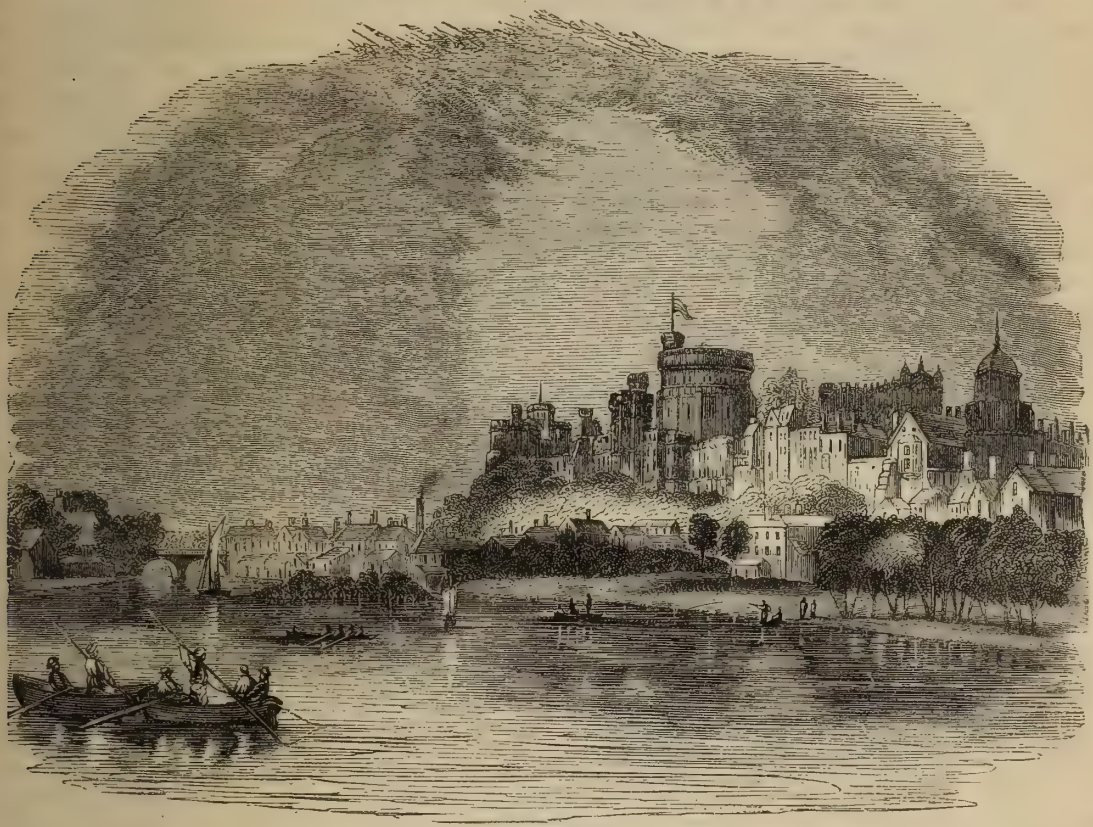
LONDON:
JOHN WILLIAM PARKER, WEST STRAND.
PUBLISHED IN WEEKLY NUMBERS, PRICE ONE PENNY, AND IN MONTHLY PARTS, PRICE SIXPENCE.
Sold by all Booksellers and Newsvenders in the Kingdom.

THE

Saturday Magazine.

No. 581. JULY 24TH, 1841. { PRICE ONE PENNY.

THE BANKS OF THE THAMES. V.



WINDSOR CASTLE.

Here hills and vales, the woodland and the plain,
Here earth and water seem to strive again;
Not chaos-like together crushed and bruised,
But, as the world, harmoniously confused
Where order in variety we see,
And where, though all things differ, all agree.
Here waving groves and chequered scene display,
And part admit, and part exclude the day;
There interspersed in lawns and opening glades,
Thin trees arise that shun each others' shades.
Here in full light the russet plains extend;
There wrapt in clouds the bluish hills ascend:
Even the wild heath displays her purple dyes,
And midst the desert fruitful fields arise,
That crowned with tufted trees and springing corn,
Like verdant isles the sable waste adorn.
Let India boast her plants, nor envy we
The weeping amber or the balmy tree,
While by our oaks the precious loads are borne,
And realms commanded which those trees adorn.—POPE.

WHEN Mr. Ireland wrote his description of the Thames, nearly half a century ago, he said, "Were I to fix on a spot for a picture, it should be at turning the bend of the river at Clewer, when by the evening sun the parts are so beautifully discriminated, and so happily massed by the shadows, as to form a splendid object, in which beauty and dignity are equally combined." How far the progress of building during the last fifty years may have lessened the picturesque beauty of the scene, would perhaps be estimated differently by different persons; but there can be no doubt that the view of Windsor Castle, and other places near Clewer, is one of the most interesting which the banks of the Thames afford. The whole neighbourhood teems with associations: Windsor Castle, the residence of so many sovereigns; Eton, with its distinguished seminary; Datchet Meads, and Herne's Oak, with their Shaksperian associations; all arrest the attention of the Thames tourist at this spot.

The Thames passes between Windsor and Eton, having the former town on the south bank, and the latter on the north. The town of Windsor has frequently the additional epithet of "New" attached to it, to distinguish it from Old Windsor, a village a mile or two distant. Like many other towns in England, it seems to have owed its origin to the castle built near it.

The Castle was commenced by William the Conqueror, who chose the summit of a lofty hill for the site, partly as a matter of security, and partly for the pleasantness of the situation. He enclosed parks, made large forests for hunting, and enacted laws for the preservation of game. Henry the First added a chapel and other apartments, as well as walls and ramparts. This monarch, as well as John, and the first two Edwards, made Windsor a frequent place of residence. Edward the Third pulled down nearly the whole of the Castle, and erected the greater part of the present splendid structure. The work was accomplished under the direction of William of Wykeham, afterwards Bishop of Winchester, and one of the most able architects of his time. He received *seven shillings per week* as his professional emolument,—a large sum in those days. It is said that he was on the brink of disgrace by having cut in a stone

of the new building the words, "This made Wykeham," a sentence capable of a double meaning, but which he explained as intended to imply that the castle was the making of his fortune. St. George's Chapel was begun by Edward the Third, and finished by Edward the Fourth, who was buried there, and whose remains were found in 1789, in a coffin beneath his monument.

Nearly all the successive monarchs down to the time of Elizabeth made some additions or improvements to the Castle; and indeed the same may be said of subsequent sovereigns. Henry the Seventh made additions to the chapel and upper ward; Henry the Eighth rebuilt the principal gateway; Elizabeth constructed the terrace on the north side of the Castle; and Charles the First also made some alterations. During the fury of the Republicans, the Castle suffered much damage; but Charles the Second, on his restoration, repaired the injuries which it had sustained, furnished the royal apartments in a costly manner, formed a collection of paintings, and also a magazine of arms.

Passing over the intermediate monarchs, we come to the time of George the Third, who made very great alterations under the superintendence of Mr. James Wyatt. These consisted chiefly in rendering the apartments habitable, and introducing the more modern comforts into their arrangements; in the rebuilding of the great staircase; the restoration of the pointed style of architecture, which Charles the Second had displaced for others inconsistent with the general character of the building; the thorough repair of St. George's Chapel; and the preparation of a mausoleum for his Majesty and his descendants. After the death of that monarch, his successor George the Fourth planned other and still more extensive changes, upon which Sir Jeffry Wyatville was engaged throughout the king's reign. Even since that period, considerable alterations have been made, and great outlay has been incurred in making the palace fit for the residence of the sovereign of a great country.

The buildings composing the Castle are about a mile in circumference, and are contained in or surrounded by three wards or courts. The upper ward contains on the north side the state apartments, and the hall and chapel of St. George. On the east and south sides are the sovereign's private apartments and those of the royal household. The old principal gateway, being low and inconvenient, was replaced by a new one, of noble and imposing appearance, opposite to the grand entrance of the state apartments, and directly in a line with the Long Walk in the Great Park, which thus forms a magnificent avenue in the approach to the Castle. On either side of the gateway is a tower, one called York and the other Lancaster tower. Around the south and east sides of the court runs a fine corridor, more than five hundred feet in length, forming a medium of communication between the different buildings and apartments which surround it.

As we cannot attempt in this place to describe the state apartments which surround the upper ward, we shall pass to the lower ward. This is much more spacious than the other, and is divided into two parts by St. George's Chapel, behind which are the residences of the dean and canons. The apartments of the minor canons, clerks, and other ecclesiastical officers, are situated at the west end of the chapel, in what are termed the Horseshoe Cloisters. The collegiate chapel of St. George, considered as an ecclesiastical establishment, consists of a dean, twelve canons, seven minor canons, thirteen lay clerks, ten choristers, a steward, a treasurer, and inferior officers. Various towers, appropriated to different purposes, occupy portions of the buildings surrounding the lower ward.

The middle ward is occupied almost solely by the celebrated Keep, or Round Tower, the most conspicuous object in the Castle. It contains the apartments of the constable or governor of the Castle, who has the command of the Castle, its garrison, and magazine of arms, holds a court of record, and is judge of the pleas between parties within the precincts of Windsor Forest. In ancient times the custody of distinguished state prisoners was committed to his care. John, king of France, David, king of Scotland, the Earl of Surrey, the Earl of Lauderdale, the Earl of Lindsay, and the Marshal de Belleisle, are among the distinguished men who were at different periods confined in this keep. In the view enjoyed from the battlements of this tower, the windings of the Thames, with the succession of villages, mansions, and detached farm-houses, the luxuriant landscape of the parks and forest, the bird's-eye prospect of the town, and a vast tract of country extending to the hills in the remote distance, combine to form a panorama which, for beauty and magnificence, is considered to be almost unequalled. Twelve counties are included within the range of view, viz.: Middlesex, Essex, Hertford, Bedford, Buckingham, Berkshire, Oxfordshire, Wiltshire, Hampshire, Surrey, Sussex, and Kent.

Two parks are attached to the royal domain. The Little Park contains about five hundred acres, and is four miles in circumference, extending on the north and east sides of the Castle to the river Thames. It was enclosed with a brick wall by William the Third, and is chiefly stocked with sheep, cattle, and a small herd of red deer. In this park, which abounds with hares, George the Third frequently took the diversion of coursing; and on the south-east side of it stood a venerable tree, known by the name of Herne's Oak, and which, according to tradition, was the identical tree mentioned by Shakspere. "Master Page" informs us that

> There is an old tale goes, that Herne the hunter,
> Some time a keeper here in Windsor Forest,
> Doth all the winter time, at still midnight,
> Walk round about an oak with great ragged horns,
> And there he blasts the tree, and takes the cattle,
> And makes milch-kine yield blood, and shakes a chain,
> In a most hideous and dreadful manner.

It has been said that Herne, who was keeper of the forest in the time of Queen Elizabeth, having committed some great offence, was hung on this tree; and that the credulity of the times easily worked on the minds of the ignorant to suppose that his ghost should haunt the spot. It was cut down a few years ago, and converted into various little articles of furniture and ornament, as Shaksperian relics. Frogmore Lodge, formerly belonging to Queen Charlotte, and afterwards the property and residence of the Princess Augusta Sophia, is separated from the Little Park only by the London road.

The Great Park adjoins the south side of the town. At one time it consisted of four thousand acres, and was fourteen miles in circumference; but King George the Third set apart about half of it, for the formation of experimental farms, and other purposes connected with agriculture. The scenery of this park, which is stocked with several thousand heads of deer, is both varied and picturesque. It is intersected by several roads, the principal of which, known as the Long Walk, skirted by an avenue of majestic trees, commences at the new entrance gateway of the upper ward, and extending nearly three miles in length, terminates at the summit of a bold rise, commanding a superb view of the Castle, Eton College on the other side of the river, and the country beyond them. At various parts of the park have been erected lodges or cottages, as retired summer residences for different members of the royal family; among which were the Royal Lodge and Cumberland Lodge. One of the rides in the park forms the principal approach to Virginia Water, a beautiful lake at the southern extremity of the park, and terminating at a fanciful building called the fishing temple. This spot was a favourite resort of his Majesty George the Fourth; and was by him adorned with miniature frigates and pleasure boats. Several bridges, one of them with a single arch of a hundred and sixty-five feet span, cross this fine piece of

water, which, near the road to Basingstoke, forms a beautiful cascade, and then flows on in a stream that winds through the western part of Surrey, and falls into the Thames near Chertsey.

To enumerate the various points of interest and attraction presented by Windsor Castle, would be wholly out of place in a series of articles such as the present; we must therefore proceed onward in our tour. Passing under Windsor Bridge, and along the margin of the playing fields of Eton College, the bend of the Thames presents a fine view of the north front of Windsor Castle. Winding round the Little Park, the river pursues its course to Datchet, a pretty village on the northern shore; at a short distance from which is Ditton Park, the residence of Lord Montagu. The original mansion, a venerable structure which had been enlarged at various times since its first erection in the reign of Edward the Third, was destroyed by fire in 1812. On its site has been built, from the designs of Mr. Atkinson, a handsome castellated edifice, with turrets and battlements, surrounded by a moat, and having its principal entrance defended by an embattled gateway, flanked with towers. A drawbridge crossing the moat, connects the house and grounds with the park.

On the opposite bank of the river soon appears Old Windsor, which has been termed a "village of villas." Near the margin of the river is situated Old Windsor Manor House, partly surrounded by a moat, and exhibiting on the water-front the appearance of an ancient manorial edifice. But the most conspicuous object at Old Windsor is Beaumont Lodge, built a few years ago on the site of an older structure erected in the early part of the last century. The mansion is remarkable as presenting a specimen of what has been termed a new style of architecture, viz. the British. The principal front is of considerable elevation; its chief feature is a corridor consisting of coupled columns, or rather columns in imitation of twin trees growing from one root; between the stems is introduced the shield of a knight; and the capitals are formed after the caps worn by the Knights of the Garter, the star of the order forming a centre; and the whole is finished with Ionic volutes, and emblematic figures of the arms of England. The metopes are ornamented by the George and Collar; the decorations of the frieze over the columns are composed of ostrich feathers, tied with ribbons and blended with acorns; while the continued frieze is made up of naval and military trophies. This attempt to form a national style of architecture was made by a Mr. Emlyn of Windsor; but it does not appear to have met with encouragement.

THE OIL-BEETLE AND THE BLISTERING-BEETLE.

The genus of coleopterous insects, named Meloe by Linnæus, belonging to the section Heteromera and the family Cantharidæ, includes some very remarkable insects, which may be generally described as having the body large and distended, the wings entirely wanting, and the elytra short, oval, and folding partially over each other at the base: the antennæ are eleven-jointed, of nearly equal thickness throughout, or dilated and knotted in a singular manner, or elbowed in the centre, especially in the males. The body is generally of a deep black, bordering in many species on bluish and violet, and very much punctuated. These insects are of a comparatively large size: they are very inactive, crawling sluggishly upon the ground, in the fields, tilled lands, on the edges of highways, or among low herbage upon which they feed; but they seem to prefer sandy or calcareous places exposed to the sun. When seized or disturbed they emit, from the articulations of each knee of their legs, a viscous fluid, similar to oil, of a yellow colour and disagreeable odour. This oil was once highly celebrated for its supposed efficacy in rheumatic pains when used as an embrocation to the parts affected: for this purpose also oil was obtained by crushing the insects in a press. This oil was also used as a specific against madness, and farriers in some cases employed oil in which these insects had been macerated. These insects, of which eight or nine species occur in Britain, are most frequent in spring and autumn, and some of them, especially the type, *Meloe proscarabæus*, are not uncommon. They possess to a certain extent the vesicatory powers of the Cantharides, and are used in some parts of Spain instead of the true blister-fly. The females, when filled with eggs, become greatly dilated, and exceed the males in size. Goëdart preserved a female proscarabæus, and fed it with anemone and ranunculus leaves. Between the 12th of May and the 12th of June it laid 2212 eggs, besides about as many more which were not counted. These eggs were produced at two separate times, the insect depositing the eggs in a hole in the ground, which it had made with the posterior extremity of its belly. These eggs were yellow, and resembled small grains of sand pressed together. The larvæ, according to this observer, have the body long, cylindrical, sprinkled with hairs, composed of eleven rings, almost equal, and with an oval head, furnished with two eyes and two longish antennæ. They have six legs, of rather large size, compared with the body, which is terminated with two long appendages, in the form of silky hairs. Goëdart was not able to rear these larvæ, although he fed them with a variety of animal and vegetable matter. This want of success has attended the efforts of many other entomologists.

These larvæ are supposed by some observers to be parasitical on the bodies of winged insects. Degeer having noticed that a strong resemblance existed between the larvæ of Meloe and a small insect which he found adhering to the body of a fly resembling the humble bee, placed some domestic flies among the larvæ of the Meloe, and found that in less than half an hour a very great number of these larvæ had become attached to the breast and belly of the flies. After some vain efforts to get rid of the larvæ the flies perished on the second or third day, and the larvæ abandoned the body. Having been furnished during many days with living flies, they fastened on them. As soon as a fly passed near them there were always some which directly seized it by the foot or wing, and never quitted their hold until in a favourable situation to attack the body. Degeer found, however, that they did not increase in size, and, neglecting to supply them with victims, they all died.

Other observers have contended that the larvæ spoken of above were not those of the Meloe, but of some other insect; but as the information does not rest upon Degeer's information alone, the early history of the Meloe must be considered as quite unsettled.

The *Meloe vesicatorius* of Linnæus (*Cantharis officinalis* of Geoffroy) is the celebrated blister-fly, or Spanish fly, so much used in medicine. It is distinguished generically by the possession of complete wings and wing-covers, by having the joints of the tarsi entire, and not bilobed, and the thorax nearly ovoid: the body is long and narrow, with the head rather longer than the thorax: the second joint of the antennæ is very small. This insect varies very much in its size, being sometimes not more than half an inch long, while others are twice that length. It is of a rich green and golden colour, very shining, and delicately punctured, with the antennæ (except the first joint) black. It is very rare in this country, but has been seen occasionally near Cheltenham and elsewhere.

The Cantharis is one of those insects which have been most anciently and most universally known. Physicians, who were the first natural philosophers, and the first observers of nature, have made mention of the cantharides in the remotest times. But they have only considered them

under that relation which was most suitable to their own profession, and as furnishing to medicine one of its most powerful agents. The naturalist, who is less anxious about becoming acquainted with the medicinal virtues of the dead, than with the peculiar habits of the living cantharides, is yet very far from having acquired in this respect certain, extensive, and satisfactory information. The only species which has been deemed to be endowed with useful properties has caused a forgetfulness of all the others which compose the entire genus; and all that we know in general respecting these insects is, that in our European climates they live on plants, devour the leaves of certain trees, shun the cold, appear at the commencement of spring, and disappear at the beginning of autumn. We are therefore unable to do any more than present some general ideas respecting the cantharis which is peculiarly consecrated to the purposes of medicine.

It is more than probable that experiments on insects relatively to their utility in medicine and the arts, have been too much neglected in general. Their diminutive size has doubtless caused them to be too much despised. It cannot, however, be doubted that there must be a great number of them whose virtues are at least equal to those of the cantharides, and many others which are less acrid and less caustic, might in many cases be taken internally, with less danger and a greater chance of success. We may rest assured that all the species which belong to the genus *Cantharis* possess pretty nearly the same virtues as the species which is most generally known, and consequently in all the countries in which they are found, the same usage might be made of them. Among the insects taken from other genera, which might furnish caustic and irritating particles, and which might be substituted for the cantharides to a certain extent, we may range *meloe, mylabris, carabus, tenebrio, cicindela, scaribes, coccinella,* &c. The cast skin of the majority of the caterpillars produces a dust, which scattered by the winds, raises pustules on the face with which it comes in contact. The same effect is occasioned by the hair and wool of certain phalenæ when they are touched. Marian found at Surinam some species of the larvæ of lepidoptera, which one could not touch without being suddenly attacked with inflammation.

The early history of this insect is but little known. The female deposits her eggs separately, forming them into an agglutinated mass, and burying them underground. The larvæ have a soft body, of a yellowish white, composed of thirteen rings; the head rounded, somewhat flat, and furnished with two short antennæ: the mouth is provided with two tolerably solid jaws, and four antennulæ. They have six short and scaly feet. They live in the earth and feed on various roots. When they have attained their full growth, they change into the nymph state in the earth, and do not come out of it until they have assumed the perfect insect form.

The cantharides are abundant in Spain and in the south of France, especially in the month of June, when they assemble for the purpose of pairing. This is the time when they must be seized, especially at the hour of sunset or sun-rise, when they are in a somewhat torpid state. They are found upon ash-trees, Tartarian honey-suckles, lilacs, rose-trees, poplars, elms, &c., the leaves of which they devour, and when this sort of food is wanting, they throw themselves upon corn and grass, and commit great damage. As they appear in large troops or swarms, and are accompanied by a very penetrating odour, somewhat similar to that of mice, it is not difficult to discover and collect them, provided certain precautions are adopted which should never be neglected. The odorous particles exhaled by them are so very corrosive, that people have been violently affected whilst gathering them during the heat of the day with bare hands, or even when they have fallen asleep under trees where swarms of them have gathered. The persons who collect them are protected by masks and gloves.

There are two modes of collecting cantharides. The first and most simple consists in spreading under the tree which harbours these insects several cloths on which they are made to fall by shaking or beating the branches. The insects are then gathered on a hair sieve, and held over the vapour of boiling vinegar, which kills them; or they are collected on a linen cloth, which is folded and steeped several times in vinegar and water. This is the method most generally adopted.

The second method is to spread cloths about the tree, and the vapour of vinegar is diffused by causing it to be boiled in earthen pans placed in chafing-dishes. The trees are then shaken to cause the cantharides to fall: they are picked up immediately, and enclosed for twenty-four hours in vessels of wood, earth, or glass.

When the insects are dead it is necessary to dry them thoroughly, otherwise they would contract a most detestable odour, and be rendered unfit for medicinal purposes. For this purpose they are exposed to the heat of the sun, or of a stove, or they are placed in a well-aired attic on hurdles covered with linen cloth or paper. They are occasionally stirred about with a stick, or with the hands protected with gloves, for without this precaution the workmen would be exposed to the most painful sensations. When properly dried, the cantharides are so light that fifty of them weigh scarcely a dram.

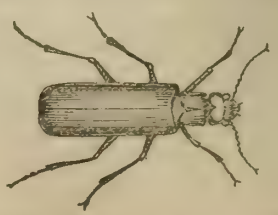
The insects are preserved in boxes or bands lined with paper, and firmly closed. A part of our supply of cantharides is from Astracan and Sicily: but though bearing the name of Spanish blistering flies, the greatest quantity is obtained from St. Petersburg; and the Russian insects are said to be superior to those from Sicily and France. Cantharides are liable to the attacks of many insects and worms, but as these feed only on the inert part, they do not destroy the vesicant property.

Chemists have subjected cantharides to analysis, and have separated from them a peculiar substance, which is called *cantharadin:* this is the vesicating or blistering principle of the insect. It is a white substance under the form of small crystalline plates; when pure it is insoluble in water; it is soluble in ether, in boiling hot alcohol, and in the fixed oils. Some chemists regard it as a kind of animal camphor.

Cantharides also yield to analysis the following substances:—1. A greenish fluid oil, insoluble in water, but soluble in alcohol. This is inert. 2. A black matter, also inert; it is soluble in alcohol but not in water. 3. A yellow viscid matter soluble both in water and in alcohol. This has no blistering property. 4. A little fatty matter; phosphates of lime and magnesia; acetic and uric acids also occur in cantharides.

The external application of cantharides is made by reducing them to powder, mixing them up with some fatty substance and applying a plaster thus formed to the surface of the body. It immediately begins to act, and detaches the outer skin from the dermis with great rapidity. When given internally it is in the form of an ethereal or alcoholic tincture; but it is a medicine requiring the utmost degree of caution and circumspection in its administration; and the cases in which it is proper to give it as an internal remedy are very few.

Meloe proscarabæus, Linn. THE OIL BEETLE.



Meloe vesicatorius, Linn. THE BLISTERING-BEETLE.

POINTER AND SETTER.

RURAL SPORTS FOR THE MONTHS.

JULY.

The present month is not distinguished for any special employment which can be designated a rural sport: the angler continues to ply his vocation, and we might dwell on many interesting particulars in connection with this sport, but as we have already given a brief outline of his proceedings, and are engaged in a course of articles descriptive of several of the most highly-prized among the inhabitants of our rivers, it appears unnecessary to devote further space to this subject. The approaching season, however, presents so many attractions to the sportsman, and enters so largely into his anticipations of pleasures to come, that we shall not be considered as deviating from our course, if we also look forward to the "Shooting season," and make a few observations on the sagacious and truly interesting animals employed by the shooter to secure the different kinds of game which will shortly become the object of his pursuit.

England has long been celebrated for the superior excellence not only of its horses but of its sporting-dogs. Our grey-hounds, fox-hounds, and harriers are unequalled, and that they are so results from the care which is taken to keep the species distinct. The instinct and the fine olfactory powers of these animals are remarkable; but in the pointer and setter the instinct manifested is still more extraordinary. These latter animals appear to be endowed with their peculiar qualities especially for the service of man, while those of all other animals are calculated for the supply of their own individual wants, as well as being secondarily of importance to the human race.

When the intellectual endowments of the domesticated races of dogs are permitted to weigh in the scale,—when we begin to consider the faculties which the bounty of nature has bestowed upon them,—the sincerity and disinterestedness of their attachment,—the sagacity, strength, velocity, courage, and perfect obedience which they proffer to man,—we cannot refuse them our admiration and affection. To what other species could we look for voluntary association with our fortunes? Which of them would, like the dog, lend us the full use of senses so acute as his? Which can rejoice in our joy, be vigilant and bold in our defence, obedient to order, faithful in our adversity, understand our least words and signs, and die on our graves from pure attachment? These qualities, we all know, dogs possess. Here, then, we find the source of that consideration which is granted them by all men near a state of nature; and although conceded by them with niggardly hands, the wild man of the old world, the stoical hunter of the new, the half-frozen Esquimaux, and the savage of Australia, differ only in their mode of acknowledgment from the expressions of favour with which the drover, the shepherd, the sportsman, and the fine lady of civilized society regard them.

As the dog alone, of all the brute creation, voluntarily associates himself with the condition of man's existence, it is fair to presume also that he was the first, and therefore the oldest of man's companions; that to his manifold good qualities the first hunters were indebted for their conquest and subjugation of other species. We do even now perceive, notwithstanding the advance of human reason and the progress of invention, that in a thousand instances we cannot dispense with his assistance.—Lieut.-Col. Smith.

Doubtless it required, at first, a long course of patient education and careful management to produce even a distant approach to the perfection of the present breed of pointers; but certain it is that an instinct favourable to "pointing" must have existed in this race of dogs in particular, for of no other animal can it be said, that with proper training he would form a substitute for the true pointer.

The pointer was originally a native of Spain; and among our English breed, such dogs as have the most Spanish blood in their veins are esteemed the best. The Spanish pointer is about twenty-one inches in height. He has a large head, is heavily made, broad-chested, stout-limbed, with a large dew-lap; his eyes are full and widely separated, and his nose broad; his tail is straight, short and thick, and his ears large, pendulous, and fine; the finest dogs have a round and not a flat foot. When pointing, he raises one of the fore-legs, and stands on three only, with his face and tail in a line with his back. This is the position he always assumes when he comes gradually upon the scent; but whenever, by running with the wind, or any other circumstance, he comes suddenly upon game, he will stand in the most extraordinary

attitude, and will have, sometimes a very picturesque, sometimes a very grotesque appearance. The disposition to stand at the sight of game is manifested even by puppies of this breed, and is a remarkable instance of the transmission of propensities, which are undoubtedly in part acquired. And when a dog of this breed is incapacitated through age from maintaining his "point" in the natural posture, he will sit down on his haunches with his face towards the game, turning his head occasionally to see whether the gun be approaching.

Notwithstanding the acknowledged excellence of British pointers, it is frequently lamented by true sportsmen, that there is not the same care taken to keep the species distinct as in the case of hounds, and in consequence that the number is comparatively few where the qualities of that race remain unmixed with those of other dogs. Many dogs, esteemed by their owners as first-rate, are found to bear little resemblance in point of shape and appearance to the true pointer, and if, as it is maintained by high authority in the sporting world, the instinct of pointing be an inextinguishable and indestructible principle in the blood of the pointer, and that the further any dog is removed from the original Spanish pointer the worse the dog is, then such dogs, however they may be improved as to beauty of form, will necessarily possess a commixture of qualities rendering them inferior to the original breed.

The trouble in training mongrel dogs is double that of true pointers. The usual price paid for "breaking a dog," as it is termed, is from two to five guineas. Much of the future usefulness of the dog depends on the temper and judgment of the person employed in educating him. To give our uninitiated readers a specimen of the shooter's vocabulary we quote a list of some of the words made use of by the breakers and sportsmen to the dogs.

"*To-ho*" spoken in an under-tone, when the dog is ranging, is a warning to him that he is close upon the game, and is a direction to him to stand. There is no necessity for using it to a dog that knows his business. Spoken in a peremptory manner it is used to make the dog crouch when he has flushed game, or been otherwise in fault. "*Down-charge*," or "*down-to-charge*," is used to make the dog, whether it be near or at a distance, to crouch when the shooter charges, that the dog may not flush game when the shooter is unprepared. When the dog will not crouch, but continues beating, the leg-strap may be put on. "*Take heed*," and "*Be careful*," are used when the dog ranges over ground where it is customary to find birds. "*Take heed*" is a word of correction; "*Be careful*," of encouragement. The former is used by way of caution or notice to prevent the dog flushing birds by running over the ground too fast; the latter is likewise a caution, but used when the dogs beat slowly or carelessly. "*Ware fence*" is used to prevent dogs passing a fence before the gun. The dog should never, on any account, leave an inclosure until his master has left it. "*Ware*," or "*Beware*," is used to rate a dog for giving chace to a hare, birds, or cattle, pointing larks, or approaching too near the heels of a horse. "*Seek*" is the direction to the dog to look for a dead, or wounded bird, hare, or rabbit. "*Dead*" is used to make a dog relinquish his hold of dead or wounded game.—*Oakleigh Shooting Code.*

The *Setter* is endowed with sagacity and intelligence equal to that of the pointer, but is reckoned inferior in fineness of scent, and is less staunch. It partakes of the character of the pointer and spaniel, from which it has most probably descended. The setter will face briars and gorse bushes, and also delight in water, in which respects it has the advantage of the pointer who shows a repugnance to them; thus the setter is preferred on marshes for snipe shooting, and also in heavy covers; while the pointer is far superior on open ground, and will endure the greatest share of fatigue.

The disposition of the setter is mild and gentle, and it shows much attachment and gratitude towards a kind master. In colour it is in general white, with large spots or blotches of liver colour or red. The hair is not so smooth as that of the pointer, but possesses the wavy character of the spaniel's; the ears also resemble those of the latter animal. Mr. Bell gives an interesting account of one of these animals as to its domestic qualities. It was a setter bitch, which, although not regularly trained, was an excellent dog in the field. The animal appeared to be always on the watch to evince love and gratitude to those who were kind to her, and the instinct of attachment was in her so powerful that it showed itself in her conduct towards other animals as well as to her human friends. A kitten lately taken from its mother, was brought up with the dog, and at first showed all the usual horror on the approach of its companion. But Juno seemed determined to conquer the antipathy, and by the most winning and persevering kindness and forbearance—advancing and receding as she found the waywardness of her new friend's temper required—she completely attached the kitten to her; and as she had lately lost her puppies, and still had some milk left, the pair were often seen seen lying together before the fire, the kitten sucking her kind foster-mother, who was licking and caressing her as her own offspring. On another occasion when a Spaniel bitch had puppies, of which all, excepting one, were destroyed, Juno would take every opportunity to steal the remaining one from its mother's nest, and carry it to her own, where she would lick and fondle it with the greatest tenderness. The mother, also a good-tempered creature, as soon as she had discovered the theft, hastened, of course, to bring back the little one, which was again to be stolen on the first favourable opportunity; until, at length, the two bitches killed the poor puppy between them as they were endeavouring each to pull it from the other; and all this with the most perfect mutual good understanding.

Such anecdotes might be multiplied with respect to the next species of sporting-dog we have to notice, *i.e.*, the *Spaniel*, for of all dogs, this is perhaps the most affectionate in its nature, the most grateful for kindness, and the most patient in enduring ill-treatment. The spaniel is the best dog for beating covers, provided he can be kept near the gun. He is generally expected to give tongue when game is flushed; some spaniels will give notice of the game before it springs, which is not amiss where wood-cocks only are expected to be found; but wood-cock and pheasant shooting are usually combined, and the latter sport cannot be conducted too quietly. Whatever the species of game may be spaniels are the best dogs, where the cover is so thick that the shooter cannot keep his eye upon the dogs.

The dogs called *Retrievers*, are those employed to find lost birds. Newfoundland dogs are reckoned the best for this purpose. A good retriever has a very fine sense of smelling, and is as sure to follow the track of the wounded bird, on whose scent he is first put, as a blood-hound that of a human being or deer.

SCIENCE has scattered her material benefits so lavishly wherever she has been in presence, that no small number of her followers—and all the multitude—have left off gazing on the resplendency of her countenance in their eager scramble for her gifts. From those who frequent her courts with such views, she veils her brightness and withdraws her spirit, leaving them to grovel, poring like Mammon on the golden pavements of her mansion, while their ears are deaf to its celestial harmonies, and their mouths closed to its breathings of paradise.—*Quarterly Review.*

I KNOW that eastern winds have power
To nip the young and tender flower;
Clouds may obscure the rising day,
And its young glories fade away:
And so, my hopes may meet with blight,
My early days seem dark as night;
Blessings may leave me one by one,
And yet I shall not be alone.
God will be with me, and his love,
Through weary years of care, will prove
Amid the desert one green spot,
One hope that still deceiveth not

BEET-ROOT SUGAR.

II. The Early Modes of Producing Sugar from the Beet.

In our last article on this subject, we briefly enumerated the different kinds of *Beta*, or Beet-root, and also the mode which had been recommended for the cultivation of those varieties of the root which abound most in saccharine matter. We now proceed to notice the process of obtaining the juice from the root, and of converting it into sugar. The researches detailed in the last paper were chiefly those of M. Achard; but the method of obtaining the sugar, which we shall describe, is that adopted by Professor Gottling, as being rather more easy in practice than that of Achard.

Gottling recommends the roots to be taken out of the ground about the end of September or the beginning of October, in order to have good weather for drying them. They should be well washed as speedily as possible, and their small fibres should at the same time be cut off; as likewise such part of the root as in growing had risen above the surface of the earth. The roots are to be afterwards wiped with a cloth, and laid upon a dry floor; their heads are to be cut off and given to the cattle; and the roots should be then sliced lengthwise down the middle, each half again cut into thin slices, and loosely hung upon strong thread upon nails, in an airy chamber or place sheltered from rain. The slices should not be placed too near together, lest they spoil, nor too many be put upon one string; it is advisable to turn the strings upside down once or twice, to effect a speedier drying. In the course of ten or twelve days they become so dry that the strings may be removed nearer together, in order to allow fresh roots to be hung up, if there should be scarcity of room. Instead of placing the sliced roots upon strings, stages may be made in outbuildings; and the slices may be laid on netted frames. If the drying season be far advanced, or a frost be expected, the beet-roots should not be exposed to the external air, but should be dried in a warm room on strings or netted frames, resembling the flakes formerly used in Yorkshire for drying oat-cakes.

The slicing of the beet-root may conveniently form an evening occupation; and no more should be sliced at once than can be strung or placed on frames to dry, as it is not advisable to let the roots remain in slices long in a heap. The roots may be dried in stove-rooms by artificial heat; but great care is in that case required to keep them free from being smoked or burned, as the sugar would hence become dark-coloured, and of an unpleasant flavour. It is better therefore not to dry the roots by means of stoves, unless in case of necessity, such as where the frost may prevent the roots from being dried in the open air. Where opportunity will not permit the beet-roots to be sliced soon after being taken out of the earth, they should be placed in cellars and covered with straw, or put into holes in dry sandy earth, and preserved till wanted.

The roots should be dried throughout, and not partially. If they appear grey on the outside, they should be white or red on the inside; and, if chewed between the teeth, they should have a very sweet taste, free from must or acidity. When dry, the roots are ready to have the sugar extracted; and, to effect this, it is necessary to provide three wide but shallow wooden tubs, made of oak, ash, willow, or some other non-resinous wood. Each tub should have a cock or spigot near the bottom, and should be placed at such a height from the ground that a smaller vessel may stand beneath it, to receive the liquor when drawn off. The three vessels are thus placed near each other, in a place where the temperature is about 52° Fahr.; and where good clear water may conveniently be pumped into the upper vessels.

The dried slices of beet-root, after being sifted from dust and loose fibres, are put into one of the upper tubs. Clear cold water is then poured on the roots, to about one-third in height above them. After the beet has been thus steeping for three hours, being stirred at intervals with a wooden paddle, the second tub is supplied with about as much beet as had been put into the first; and the sweet liquor from the first tub, is drawn into the vessel underneath, and poured upon this second. Sufficient clear water is then put into the first tub to cover the beet; and the beet in both tubs is stirred occasionally for another period of three hours. The liquor in the second tub, which, if the beet were of the proper kind, would now be very sweet and of an agreeable red colour, is drawn off, and filtered through a sieve or flannel, into the vessel beneath.

After this, the second supply of liquor is drawn from the first tub, and poured into the second; more fresh water is poured on the first tub; and both are left to steep for three hours, as before. Then the third tub is brought into requisition in the same way as the other two, by putting into it an equal quantity of dry beet, to which is added the liquor from the second tub. After which, the liquor from the first tub is removed to the second; and the beet in the first tub, being now deprived of saccharine matter, may be used for feeding hogs or cattle.

When another period of three hours has elapsed, the liquor is drawn from the third tub, by filtering as before; and the liquid from the second vessel is poured into the third. Another supply of fresh water is poured into the second vessel, and is allowed to remain three hours, being stirred occasionally. During this time the first tub is cleansed, and a new supply of beet is put into it. This goes through the same routine of processes as before; and thus the operations continue until the saccharine matter has been obtained from all the beet. It will be seen that this apparently circuitous employment of the three tubs, and the interchange from one to another, is for the purpose of obtaining all the saccharine matter from the beet, without loss; but it will not be necessary to trace the steps further. The spent roots having been given as food to cattle, and the juice being ready for boiling into sugar, the operations proceed as follow.

The extracted saccharine liquor is boiled down to the consistence of syrup; then put into a copper, and boiled over a moderate fire until that degree of thickness is obtained that a phial which holds one ounce of water will contain eleven drachms of the syrup. As the scum or froth rises, it must be carefully taken off. When the syrup is brought to the desired consistence the fire must be removed from the copper, and the syrup gradually poured through a thin woollen cloth, placed over a wooden or stone vessel. The syrup must not cool too much before thus filtered, otherwise it becomes "ropy."

When the filtered syrup is somewhat cool, it is laded into shallow wooden or stone vessels to crystallize; vessels made of tin, and also shallow earthen vessels, such as are used to produce cream, may however be adopted for this purpose. The vessels, filled with syrup, are placed in a room heated to about 70°; and care is taken to keep the syrup clear from flies and dust. If the syrup has been of a proper consistence, crystals will soon begin to form at the bottom of the vessels; and in the space of eighteen or twenty days, the crystallization will be completed. The mass must then be put into a strong linen sack, well secured, and placed under a press to squeeze out the liquid from the sugar which remains in the bag; a cheese-press or long lever will serve for the purpose of pressure. The liquid matter may be set to crystallize a second, and even a third time, and will yield sugar of a coarser quality.

The sugar first obtained may be rendered purer by well mixing therewith a small quantity of clear spring-water, and placing it again under the press; the coloured syrup will then run out, and leave the sugar in the bag

in a much purer state than before. By repeating the operation the sugar becomes so far improved, that it assumes, when dried and rubbed, the state of a fine white powder. The separated syrups being again carefully boiled, more sugar will be obtained from them by crystallization.

If the sugar produced by the first pressure be dissolved in as much clear water as will form a syrup, and placed again in a warm room to crystallize, it will yield a much purer and harder sugar. The syrup may then be separated without pressure from the sugar, merely by inclining the vessel, and allowing the syrup to run off from the crystals. The remaining thick syrups may be used as treacle or molasses, and will serve the purposes of the distiller.

Such is the process which Professor Gottling suggested for the preparation of beet-root sugar, and which was first made known in England by Mr John Taylor. We may here follow up these details by a notice of the constituent elements of beet-root, as determined by Professor Lampadius, of Freyberg.

Beet-root contains or consists of water, fibrous matter, sugar, mucilage, albumen, starch, and three substances which, for want of better names, are termed the colouring, the odoriferous, and the bitter principles. The following very interesting train of experiments was made by Professor Lampadius, with a view of determining what substances he could obtain from one-hundred and ten pounds of the white beet-root, the *Beta cicla* of Linnæus. The beet, when washed, peeled, cleaned, and grated, gave a mass weighing eighty-seven pounds; out of which were pressed forty-one pounds and a half of juice. This juice was boiled with twenty ounces and a half of charcoal powder; by which it was made to yield, when filtered and evaporated down until crystallized, five pounds of a brownish-yellow grained sugar, and five ounces of brown syrup. This brown sugar, after being dissolved in six pounds of lime water, mixed with one pound of blood, was boiled, filtered, and evaporated; from which resulted four pounds five ounces and a half of purified brown sugar, and six ounces and a half of syrup. The purified sugar thus produced, was then dissolved in six pounds of lime water, mixed with one pound of milk, and boiled for a quarter of an hour; during the boiling a small quantity of white wine vinegar and a little more milk were added; the saccharine matter was filtered and treated as before; and the product was four pounds of well-grained white powder sugar. The residuum after pressure, the brown syrups of the first two processes, and the remains of the filtrations, weighed, when collected, forty pounds. They were then mixed with one quart of yeast and eighty quarts of water, heated to 112° Fahr.; and, after fermenting forty-eight hours, were distilled. They furnished, at the first distillation, fifteen quarts of weak spirit, which, on a second distillation, gave eight quarts of a better spirit; from which, when rectified, were produced three quarts and a half of spirits resembling rum.

We must beg the reader to bear in mind, that the foregoing details give a view of what had been done by Margrat, Achard, and Gottling, at various periods preceding the commencement of the present century. In the next paper on this subject, we shall detail the circumstances under which, and the mode in which, the French government took advantage of these experiments, in encouraging the cultivation of the beet-root in that country.

THE study of nature requires two qualifications of the mind, which at first sight appear to be opposed to each other:—the comprehensive view of a bold genius that embraces the whole, and the minute and careful inspection of an unwearied industry that lives upon the smallest objects. —BUFFON.

BIRTHDAY LINES.

THOU wakest from rosy sleep to play,
With bounding heart, my boy!
Before thee lies a long bright day
Of summer and of joy.

Yet, ere the cares of life lie dim
On thy young spirit's wings,
Now, in thy morn, forget not Him
From whom each pure thought springs.

And then, my child, in future years,
Wherever thy path may be,
When strength is gone, or grief appears,
He will remember thee!—MRS. HEMANS.

IT would be easy to produce from the writings of Infidels many testimonies to the excellence of Christianity. Bolingbroke affirms, that if Christianity has been a human invention, it is the most amiable invention that ever was imposed on mankind for their good; that it contains a most simple and intelligible rule of belief, worship, and manners; and that the Gospel is one continued lesson of the strictest morality, of justice, of benevolence, and of universal charity.

IT is no unusual thing for men of the most abandoned character to be struck with profound awe, and restrained from their vile purposes, by the presence of an eminently pious person. There is a power in real godliness, which commands the reverence of those who hate it; and this the proudest sinners often so far feel, as to be unable to carry on their violent opposition against it, while yet no saving change is effected upon them.—ROBINSON.

THE human body considered simply as an engine to be worked by a superior agent—as a system of combined and organized matter, to be actuated and controlled by a living spirit, is a most wonderful instance of creative power and plastic skill. It may be considered as a world in miniature, as an epitome of all the sciences, as an abridgment of the great book of nature. To whatever part of it we direct our attention, we discover a most remarkable exemplification of the general laws of physics. In its optics, as expressive of the functions of the eye, we have mathematics of the highest order. In the formation of the bones, and in the arrangement of its various joints and ligaments, we have the principles of mechanics most strikingly exhibited to our view. In the circulation of its fluids, the heart, the arteries, and the veins, may be regarded as an hydraulic apparatus. The process of respiration is an example of pneumatic action. In the gradual formation of its general substance—in the precipitation of the various elements which constitute its specific parts, we have chemistry in some of its finest and most beautiful combinations. Over and above all these subordinate agencies, however, there is a master principle—there is life, the grand chemist, the mighty engineer, who superintends and regulates the whole. And although he is invisible to the keenest eye, and baffles the strongest microscope, the effects which he works are too palpable to admit a rational doubt of his separate and distinct existence, and the very obscurity of his retreat tends only to raise our admiration of the power and wisdom of that Being, by whom he was originally created, and by whose will he has been attached to our frame. Truly then may we say in the view of this mysterious union of body and soul—of matter and spirit in the present condition of our nature, that we are "fearfully and wonderfully made." This is therefore doubtless the just and legitimate method of studying the science of physiology—to regard it as exhibiting throughout a most remarkable illustration of the "manifold wisdom of God." So forcibly was the celebrated heathen philosopher and physician, Galen, struck with this fact, that he remarked, that if there was no other proof of it, the examination of the human eye alone would be sufficient to demonstrate the existence of a Supreme Being.—DAVIES's *Handmaid.*

LONDON:
JOHN WILLIAM PARKER, WEST STRAND.
PUBLISHED IN WEEKLY NUMBERS, PRICE ONE PENNY, AND IN MONTHLY PARTS, PRICE SIXPENCE.
Sold by all Booksellers and Newsvenders in the Kingdom.

THE

Saturday Magazine.

No. 582. JULY 31ST, 1841. { PRICE ONE PENNY.

TURKEY AND THE TURKISH PROVINCES.

TRAVELLING POST IN WALLACHIA AND MOLDAVIA.

WALLACHIA AND THE WALLACHIANS.

In our recent article on Moldavia, we stated that this province was bounded on the south by Wallachia. The two together seem indeed to have formed the ancient province of Dacia, in the time of the Romans; but to have been separated at a subsequent period in their history.

Wallachia is bounded on the north by Moldavia, and the Austrian province of Transylvania; on the west by Baunat and Servia; and on the south and east by the Danube, which separates it from Bulgaria. The proximity of the Black Sea on one side, and of the Carpathian mountains on the other, give a variable character to the climate; but this variability is not so gradual as in England: the summer comes in very suddenly and fiercely, but is of short duration; while the winter is both long and severe. The Danube is generally frozen over for six weeks; the ice being of such a thickness as to form a road for the heaviest artillery with perfect safety. Generally speaking, Wallachia may be deemed a cold country; and this, together with a damp quality in the soil, and the existence of many marshy places, produces a marked effect on the animal and vegetable productions of the district. The vegetables are said to be of inferior flavour; the flowers deficient in perfume; the domestic animals remarkable for mildness; the bears, wolves, foxes, and other wild animals, much more timid than in other countries; and lastly, man himself, dull and heavy, with weak passions, no strength of mind, and an utter aversion to a life of industry. Such are said, on the authority of one who dwelt long in the country, to be the characteristics of Wallachia and Moldavia, so far as the influence of climate is concerned.

In our former paper we took occasion to describe the humbler classes of inhabitants; their avocations and their weaknesses. We will here glance at the more wealthy inhabitants; for Wallachia and Moldavia bear a close resemblance in these respects.

We have said that these provinces are governed by voyvodes, more frequently termed *Hospodars;* and that by recent treaties between Turkey and Russia, these Hospodars have become more than ever independent of the former, and elective on the part of the inhabitants. Throughout the whole of the last century, although the choice of these governors was nominally in the hands of the people, yet the Sultan in fact appointed them with as little deference to the will of the people as in any other of the Turkish provinces. This being the case, it was matter of state policy not to appoint a native Wallachian or Moldavian to this post, lest feelings of patriotism might induce him to rebel against the extortionate demands of the Sultan. On the other hand, there were reasons why it was deemed imprudent to appoint native Turks to this office, since, being Mohammedans, they were wholly estranged from the people of those provinces. The plan acted on, therefore, was to appoint Greeks, residing at or connected with Constantinople, to the office of Hospodar; because, although their religion corresponded with that of the Wallachians and Moldavians, yet they fawned upon the Ottoman court, and looked in that quarter for support and promotion. We mention this circumstance as an explanation of the fact, that a number of wealthy Greek families are found in these provinces, connected more or less with the Hospodars.

When the choice of the Hospodar was thus virtually

in the hands of the Sultan, the Greek chosen to fill the office received his investiture at Constantinople with great pomp. The military crest was put on his head by the Muzhur Aga, and the robe of honour by the Vizier himself. He was honoured with military music, and made his oath of allegiance in the presence of the Sultan. From the palace he went in solemn procession to the patriarchal Greek church, where prayers and ceremonies were performed similar to those which were formerly observed at the inauguration of the Greek Emperors. He was then accompanied to his principality by Turkish officers, and made a public entry into the capital of the province with a great display of magnificence, attended by the nobles and the higher orders of the clergy.

When Captain Frankland travelled through Wallachia in 1827, he found that the Hospodar was a Greek named Nicholas Ghika, whom he visited, and of whom he says:—"His Highness received us with the greatest affability, rising from his sofa, and standing upon it as he received us. He then gave us pipes and coffee, and we conversed with him in Italian and French: he is a middle-aged, good-looking man. His revenue is about three hundred thousand pounds sterling; and he is said to have amassed an immense fortune, which he has lodged at Vienna." Captain Frankland found that the Hospodar was at that time embroiled with some of the nobles on account of certain public monies which he was suspected to have appropriated to his own private use. Dr. McMichael well characterized the Hospodars, at the period of the recent changes, as exhibiting the extraordinary phenomenon of a nearly pure despotism exercised by a Greek Prince, who was himself at the same time an abject slave to the Ottoman Porte.

The Boyars, or native nobles of Wallachia and Moldavia, are but a rude class, compared with a parallel class in Western Europe. Their education is usually confined to the mere knowledge of reading and writing the language of the country, and the modern Greek. Some few add to this superficial stock of learning, a few of the rudiments of the French language; and a few others converse in it without understanding anything of its grammar or principles. A slight acquaintance with two or three ancient authors, or the power of composing a few verses, is sufficient to obtain for them the titles of literati and poets, and the admiration of their acquaintances. In short, the inducements to mental culture are so few, that early discipline and instruction are scarcely thought of. They cannot be taxed so much with any actual propensity to vice, as with the absence of any ennobling characteristics: ignorance and established prejudices are their worst enemies. They are greedy in the acquisition of wealth, and heedless in its expenditure: averse to the trouble of superintending their private affairs, they entrust them to the hands of stewards, who too often enrich themselves at their employers' expense. A lax state of morality is thus engendered, which sheds its pernicious influence through the humbler classes.

Those Boyars who have no public employment, spend their time in a very idle manner, resorting to the capitals Bukharest and Jassy, for the sake of society, and leaving the management of their country estates in very inadequate hands. They attend clubs and masked balls at the capitals; but seldom appear to engage in anything which can advance or aid their country, except when some political ferment arises.

When we state that two hundred and ten days of the year are regarded by the Wallachians and Moldavians as holidays or fasts, during which no work must be done, the reader will easily conceive, not only how stagnant must be the state of manufacturing and commercial industry throughout the country, but also how large a scope is opened for temptation and immorality of all kinds; the Boyars are "killing time" in their pursuit of pleasure; and the poor visit brandy-booths or cellars, where the mind and body suffer equally.

The Greek population of these provinces bears a considerable resemblance to that of the higher classes of society in the Morea, in dress, religion, and manners. The causes which led to their appointment in the government of the provinces we have already detailed, and the line of conduct which they pursued there was such as naturally resulted from subservience to the Sultan, and the absence of any patriotic feeling for the country which they governed. It has been well observed of the moral condition of the Greeks in the last century:—

Humiliated, degraded, and oppressed as the Greeks were since they had ceased to be a nation, civilization degenerated among them, in proportion to the weight and barbarism of the yoke that had been imposed on them; and they had insensibly contracted those habits of corruption and servile obedience, which must be inseparable from a state of slavery similar to theirs. Dissimulation and falsehood became the most prominent features of their character; and, in short, the force of the causes which acted upon them incessantly familiarized them, by degrees, to everything that could be degrading and humiliating to man.

It was from among such men that the Hospodars of Wallachia and Moldavia were chosen during the greater part of the last century.

The great bulk of the people are employed more or less in agricultural pursuits, the poorer classes cultivating the lands of the richer, and receiving payment in kind instead of money. Mr. Wilkinson, in describing the mode of husbandry in these provinces, says that the manner of tilling does not materially differ from that of other countries in Europe, except that oxen are always employed instead of horses. Wheat is sown during the autumn; and barley and Indian corn in spring. The harvest of the first two generally takes place in the month of July, that of the latter at the beginning of September; and as Indian corn is required for the nourishment of a great portion of the population, the quantity of it sown and reaped every year is equal to that of wheat. Barley, being used only as food for cattle and poultry, is sown in much smaller proportion. The vine is cultivated to a limited extent, and is planted in such places as are most sheltered from the weather: the grape is seldom gathered before the end of September, and as it does not come to a perfect state of maturity, it makes but indifferent wine of a light quality and sourish taste. The same writer observes:—

The great waste of land left in both provinces in a state of nature, and the universal custom of not cultivating the immediate vicinity of the high roads, give to the country, in many parts, an appearance of desolation; and a traveller, who only judges by the scenery within his view, is apt sometimes to think himself in a wilderness; he meets with few habitations on his way, except those attached to the post-houses, and hardly perceives any other population.

It need perhaps scarcely be said, after a due consideration of the character of the inhabitants, that good roads, and good modes of conveyance from town to town, are not to be looked for. Our cut represents a vehicle which we may term the "post-chaise" of the inland parts of these provinces. These vehicles are made entirely of wood, without a single particle of iron about them; consequently, they are very light, readily upset, and as easily righted: they are about three feet high, and four feet long, and capable only of holding a portmanteau, upon which a small quantity of hay being placed, the traveller sits. The rudeness of their construction makes them easy of repair; they are changeable at every post-house, and four horses are harnessed to each. These vehicles are driven by postilions, who generally wear a rough goatskin cap.

In our sketches illustrative of Turkey and the Turkish Provinces, we aim at taking as varied a course as our narrow limits will permit; dwelling sometimes chiefly on the antiquities, at others on the historical associations, at others on the topographical beauties of the district selected. In these two papers on Moldavia and Wallachia,

we have directed our attention mainly to the character and condition of the inhabitants, rather than to the number and ranks of their towns, &c., since the peculiar condition of these districts with respect both to Russia and to Turkey, makes the state of the population a matter of much interest.

A SCENE IN THE BICÊTRE.

The Bicêtre is the Bedlam of Paris, and Pinel, the chief actor in the following triumph of humanity, was an accomplished physician of the time. We have before alluded to the incident at page 60, Vol. XVI., *Saturday Magazine*, but the wisdom, courage, and humanity which the act displays, render it worthy of a more extended notice.

Towards the end of the year 1792, Pinel, after having many times urged the French Government to allow him to unchain the maniacs of the Bicêtre, but in vain, went himself to the authorities, and with much earnestness and warmth advocated the removal of this monstrous abuse. M. Couthon, a member of the Commune, gave way to M. Pinel's arguments, and agreed to meet him at the Bicêtre. Couthon there interrogated those who were chained, but the abuse he received, and the confused sounds of cries, vociferations, and clanking of chains in the filthy and damp cells, made him recoil from Pinel's proposition. "You may do what you will with them," said he, "but I fear you will become their victim." Pinel instantly commenced his undertaking. There were about fifty whom he considered might be unchained without danger to the others, and he began by releasing twelve, with the sole precaution of having previously prepared the same number of strong waistcoats, with long sleeves, which could be tied behind the back, if necessary.

The first man on whom the experiment was to be tried was an English Captain, whose history no one knew, as he had been in chains for forty years. He was thought to be one of the most furious among them; his keepers approached him with caution, as he had in a fit of fury killed one of them on the spot with a blow from his manacles. He was chained more rigorously than any of the others. Pinel entered his cell unattended, and calmly said to him, "Captain, I will order your chains to be taken off, and give you liberty to walk in the court, if you will promise me to behave well and injure no one." "Yes, I promise you," said the maniac, "but you are laughing at me, you are all too much afraid of me." "I have six men," answered Pinel, "ready to enforce my commands, if necessary. Believe me then, on my word, I will give you your liberty if you will put on this waistcoat."

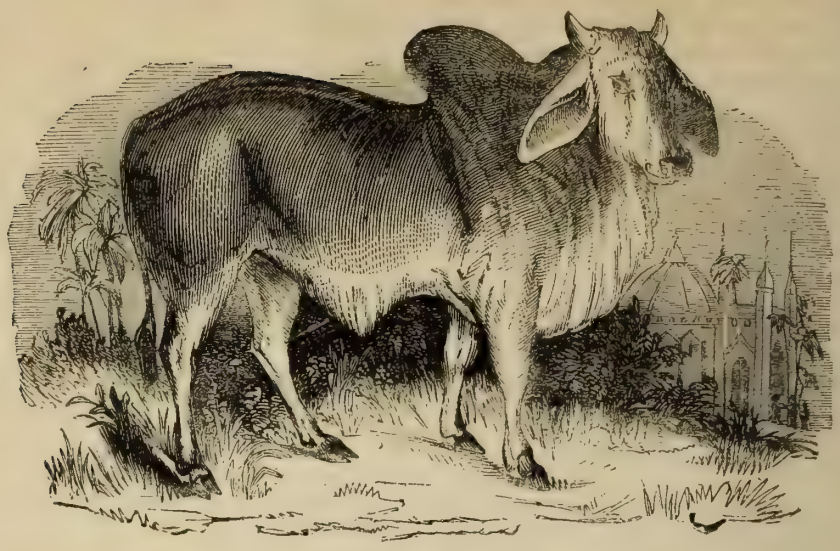
He submitted to this willingly, without a word; his chains were removed, and the keepers retired, leaving the door of his cell open. He raised himself many times from his seat, but fell again on it, for he had been in a sitting posture so long that he had lost the use of his legs; in a quarter of an hour he succeeded in maintaining his balance, and with tottering steps came to the door of his dark cell. His first look was at the sky, and he cried out enthusiastically, "How beautiful!" During the rest of the day he was constantly in motion, walking up and down the staircases, and uttering short exclamations of delight. In the evening he returned of his own accord into his cell, where a better bed than he had been accustomed to had been prepared for him, and he slept tranquilly. During the two succeeding years which he spent in the Bicêtre, he had no return of his previous paroxysms, but even rendered himself useful by exercising a kind of authority over the insane patients, whom he ruled in his own fashion.

The next unfortunate being whom Pinel visited was a soldier of the French guards, whose great fault was drunkenness; when once he lost self-command by drink, he became quarrelsome and violent, and the more dangerous from his great bodily strength. From his frequent excesses, he had been discharged from his corps, and had speedily dissipated his scanty means. Disgrace and misery so depressed him that he became insane; in his paroxysms he believed himself a general, and fought those who would not acknowledge his rank. After a furious struggle of this sort, he was brought to the Bicêtre in a state of the greatest excitement. He had now been chained for ten years, and with greater care than the others, from his having frequently broken his chains with his hands only. Once when he broke loose, he defied all his keepers to enter his cell until they had each passed under his legs; and he compelled eight men to obey this strange command. Pinel, in his previous visits to him, regarded him as a man of original good nature, but under excitement, incessantly kept up by cruel treatment; and he had promised speedily to ameliorate his condition, which promise alone had made him more calm. Now he announced to him that he should be chained no longer; and to prove that he had confidence in him, and believed him to be a man capable of better things, he called upon him to assist him in releasing others who had not reason like himself, and promised, if he conducted himself well, to take him into his own service. The change was sudden and complete. No sooner was he liberated, than he became obliging and attentive, following with his eye every motion of Pinel, and executing his orders with as much address as promptness; he spoke kindly and reasonably to the other patients; and during the rest of his life was entirely devoted to his deliverer. And "I can never hear without emotion," (says M. Pinel's son, the author of this memoir,) "the name of this man, who some years after this occurrence shared with me the games of childhood, and to whom I shall always feel attached."

In the next cell were three Prussian soldiers, who had been in chains for many years, but on what account no one knew. They were in general calm and inoffensive, becoming animated only when conversing together in their own language, which was unintelligible to those about them. They were allowed the only consolation of which they appeared sensible,—to live together. The preparations taken to release them alarmed them, as they imagined that the keepers were come to inflict new severities, and they opposed them violently when removing their irons. When released, they were unwilling to leave their prisons, and remained in their habitual posture. Either grief or loss of intellect had rendered them indifferent to liberty.

In the course of a few days, Pinel released fifty-three maniacs from their chains; among them were men of all conditions and countries,—workmen, merchants, soldiers, lawyers, &c. The result was beyond his hopes. Tranquillity and harmony succeeded to tumult and disorder, and the whole discipline was marked with a regularity and kindness which had the most favourable effect on the insane themselves, rendering even the most furious more tractable. Humane physicians in every part of the civilized world, sooner or later, responded to the feelings which dictated this memorable act, the remote consequences of which brought sympathy to a thousand cells of suffering and neglect.

Never were the splendour and magnificence of courts, and numerous trains, and noble retinue, set in a truer light, than when the King of kings contented himself with the ministry of his meek mother, and chose to receive the first respects of a few humble shepherds. Never was the true use of power more nicely taught, nor its haughty arrogance and insolent abuses more effectually reproached, than by this proof, that God was then strongest, when he put on the greatest appearance of weakness. The princes, and great ones of this world, are then most truly great, most like their glorious Original above, when they think no condescension below them for a general good.—Dean Stanhope.



THE ZEBU.

THE domesticated Asiatic Ox, or Zebu, from the perfect agreement of its internal structure with that of the common ox, is generally believed to be merely a variety of that animal. It is difficult to account for the production of those distinctive characters which now mark the two races, and separate them from each other; but whatever may have been the cause of the differences between the common and the Indian ox, these differences rapidly disappear by the intermixture of the breeds, and, at the end of a few generations, are entirely lost.

Not only does the anatomical structure of the zebu exactly correspond with that of the ox, but the more essential particulars of external conformation are the same in both animals. The form of the head presents no difference whatever. In both, the forehead is flat, or slightly depressed, of a height nearly equal to its breadth, thus giving a square outline. An angular protuberance passes directly across the skull, between the bases of the horns. The size and direction of the horns vary much. In some they are short and sub-erect, in others they are comparatively long and point backwards. The ears of some are of the ordinary size, but in others they are long and pendulous. The dewlap is, in many cases, very largely developed.

These animals are chiefly distinguished by the large fatty hump on the shoulders. Numerous breeds of this humped variety are scattered, more or less extensively, throughout Southern Asia, the Islands of the Indian Archipelago, and the Eastern Coast of Africa, from Abyssinia to the Cape of Good Hope. They differ in size from that of a large mastiff-dog, to that of a full-grown buffalo. The colour of this animal varies in different climates. Its ordinary hue is a light ashy grey, passing into a cream-colour or milk-white, but it is not unfrequently marked with various shades of red or brown, and it has been known to become perfectly black. The hump is sometimes elevated in a remarkable manner, and retains an upright position; but it often becomes half pendulous, hanging partly over towards one side. Those furnished with a second hump are of a distinct breed, said to be very common in Surat. Among the other breeds there are some altogether without horns, and others having only the semblance of them, the external covering being destitute of the support of bony processes, and consequently flexible and pendulous.

The Indian ox is employed throughout the various countries we have named for nearly the same purposes as the European one. It is a beast of burthen, and an article of food and domestic economy. In some parts of India it executes the duties of a horse, and is used both to the saddle and harness. It is said to perform journeys of twenty and thirty miles a day, though the old writers speak of fifty or sixty miles a day as its usual rate of travelling. The beef afforded by this animal is far from equalling that of the European ox: the hump, which is chiefly composed of fat, is reckoned the most delicate part.

The whole of the different breeds of zebus are held in great veneration among the Hindus. They do not in general object to work them, but to deprive them of life under any pretext whatever, is accounted a sin; and to partake with those who eat of their flesh is considered the height of impiety. A select number of these animals are, however, exempted from all services, and deemed especially sacred. They have the privilege of straying about the towns and villages, and taking their food whence they please. They are not allowed to want for anything, and the most delicate food is cheerfully prepared for them by the devotees, who impose on themselves this charitable office. Respecting the superstitious respect paid to these sacred animals we have the following remark from the *Oriental Annual.*

On the banks of the river (Cavery), in the neighbourhood of a small pagoda, we saw a couple of Braminee bulls, so sleek and fat as to form a perfect contrast with the population around them, everything suffering from the sad scarcity of grain, while the bones of these sacred animals were loaded with an encumbrance of consecrated flesh. It was melancholy to see that while thousands of human beings were starving, the bulls dedicated to the stern divinity, Siva, were so pampered that they would eat nothing but the most delicate food, and this was generally taken with a fastidious and pallid appetite. These bulls were very small but very beautiful; the dewlap of one of them hanging from his throat and between his fore-legs, almost touched the ground. I could not help feeling deeply the sad fact, that the miseries of their fellow-creatures were looked upon with cruel indifference by the wealthy members of the Hindoo community; while before the dumb creatures devoted to their gods, and those senseless blocks which form the disgusting effigies of their divinities, that food was scattered which would have saved whole families from perishing with hunger.

In Benares, and other cities which are crowded with the more wealthy Hindoos of high caste, these animals are exceedingly numerous, thronging the streets, and the courts, and areas of temples. They are very fat, indolent, and inoffensive.

Benares is accounted the holiest of the Hindoo cities, and occupies a somewhat similar position to that which Rome once held among the cities of Christendom. Bishop Heber tells us that the more conspicuous parts

of the houses in this city are adorned with gaudy paintings of flower-pots, men, women, bulls, elephants, gods, and goddesses, in all their many-formed, many-headed, many-handed, and many-weaponed varieties.

The sacred bulls devoted to Siva (says this author), of every age, tame and familiar as mastiffs, walk lazily up and down these narrow streets, or are seen lying across them, and hardly to be kicked up (any blows indeed given them must be of the gentlest kind, or woe be to the profane wretch who braves the prejudices of this frantic population) to make way for the Tonjon.

At the famous Hindoo festival called *Ponjol*, celebrated on the last three days of the year, the concluding ceremony is the worship of the cow, the emblem of *Bhavani*. The animals are first sprinkled with holy water; then the devotees make four prostrations before them; their horns are then painted with various colours; garlands of flowers and strings of cocoa-nuts and other fruit are put round their necks, which being shaken off as they walk or run about, are eagerly picked up, and preserved as sacred relics by the crowd. The consecrated animals are then driven in a body through the villages and followed by crowds of people, who make a discordant noise upon various musical instruments During the remainder of the day the cows stray whithersoever they please, and feed in every field without restraint.

Who hastens to be rich, resembles him
Who is resolved that he will quickly swim,
And trusts to full-blown bladders! He, indeed,
With these supported, moves along with speed;
He laughs at those whom untried depths alarm,
By caution led, and moved by strength of arm;
Till in midway, the way his folly chose,
His full-blown bladder bursts, and down he goes!
Or, if preserved, 'tis by their friendly aid,
Whom he despised, as cautious and afraid.—Crabbe.

The propriety of cultivating feelings of benevolence towards our fellow creatures, is seldom denied in theory, however frequently the duty may be omitted in practice. It has been recommended by the eloquence of heathen philosophers, and enforced by some extraordinary examples of heathen philanthropy, but as the foundations on which they built their beautiful theories of virtue were narrow and confined, the superstructure was frail and perishable, and never was the true foundation discovered, till brought to light by Jesus Christ. He first taught how the obstacles to benevolence were to be removed by conquering that pride, self-love, and vain-glory, which had till then constituted a part of the catalogue of human virtues. He first taught the universality of its extent by connecting it with the love of the common Father and Benefactor of all; and made the love of our fellow-creatures the test and criterion of our love to our Creator, while from true devotion to the Supreme Being, he taught that benevolence to man must necessarily flow. He likewise taught that upon all who were convinced of these truths, and were anxious to fulfil the Divine commandments, Divine assistance would be bestowed. He alone ennobled virtue, by the assurance of an eternal reward, and gave dignity to this probatory scene, by representing it as introductory to a glorious and ever-during state of felicity. —Elizabeth Hamilton.

How manifold are thy deep wonders, Lord!
Night after night into thy heavens I gaze,
And watch, as circling through the starry maze,
The golden planets move in sweet accord.
O blasphemy of fools, O thought abhorred!
That would th' eternal characters erase,
Which to the creature show in living blaze
Creative Wisdom, and a God record:
Yea—characters, that they who run may read,
Writ every where, throughout each land and sea,
In telling of His power are all agreed.
Yet nought on Earth beneath, in Heaven above,
Declares like Jesus, sinner! given for thee,
A God of holiness, a God of love.—Rev. C. Strong.

ON SWIMMING.

Self-Preservation from Drowning.

It is much to be regretted, that with the abundant supply of water assured to this metropolis, more use of it is not made for the purposes of personal health and comfort. Perhaps no capital in Europe is so poorly supplied with baths, and certainly in none is bathing so little practised. This is much to be lamented, for there can be no doubt that frequent bathing is highly conducive to health, and would tend to prevent or mitigate many of the evils usually found in overcrowded cities. From this little familiarity with immersion in water, it doubtless happens that so few persons are acquainted with the art of swimming, and with the mode in which they should conduct themselves when risk of drowning presents itself. The English above all other people should be good swimmers, exposed as they are by their insular situation and commercial pursuits, and disposition to visit other lands, so frequently to perils by sea: yet, while several towns on the Continent have their swimming schools, none such exist in London.

It is to be regretted that Dr. Franklin did not put into force his intention of establishing one. However, were public baths more numerous, this would be the less to be regretted, as, when frequent opportunities of practice are afforded, self-instruction is by no means difficult. The Romans expressed their opinion of a man's great stupidity by saying "he can neither read nor swim."

Most animals have a natural aptitude for swimming, not found in man, for they will at once swim, when even first thrown into the water; but it must be observed that the motions they then employ, much more resemble their ordinary movements of progression, than those made use of by man under similar circumstances.

The children of several uncivilized nations, especially when warmth of climate exists, frequent the water from an early age, and seem almost to swim by instinct: the remarkable powers of endurance, agility, and strength manifested while in the water by many individuals of savage tribes are well known; powers which often enable them to come off victorious in struggles with some of the fiercest inhabitants of their rivers and coasts.

The art of swimming is by no means of difficult attainment, and several authors (especially Dr. Franklin) have supplied directions to facilitate its acquisition. Above all things self-confidence (not rashness leading into danger) is required, and when this is possessed all difficulty soon ceases, especially if the learner be assisted at first by some friend who is a swimmer. Dr. Franklin (himself an expert swimmer) recommends that at first a familiarity with the *buoyant* power of water be gained, and to do this he desires the learner, after advancing into the water breast-high, to turn round so as to bring his face to the shore: he is then to let an egg fall in the water, which being white will be seen at the bottom. His object now must be by diving down, with his eyes open, to reach and bring up this egg: he will easily perceive that he is in no danger in this experiment, as the water gets shallower of course towards the shore, and, because, whenever he likes, by depressing his feet, he can raise his head again above water.

The thing which will most strike beginners will be the great difficulty they experience in forcing themselves through the water to reach the egg, in consequence of the great resistance the water itself offers to their progress; and this is, indeed, the practical lesson derivable from the experiments; for the learner becomes assured of the very great *supporting or sustaining power* afforded by water, and hence derives a confidence essential to rapid progress. This sustaining power of water is shown under many circumstances; thus, a stone, which on land requires two men to remove it, might *in water* be easily carried by one.

A man may walk with impunity upon broken glass in

deep water, because his weight is supported by the water. But many men have been drowned in attempting to wade across the fords of rivers, from not being aware that the body is supported by the water, and does not press on the bottom sufficiently to give a sure footing against a very trifling current. A man, therefore, carrying a weight on his head or shoulders, may safely pass a river, where, without a load, he would be carried down the stream*.

In fact, the knowledge of this "fluid support," constitutes the ground-work of all efforts at self-preservation from death by drowning.

That a person exposed to danger by water should swim well is important, as adding to his security, but it is still more important that he should know that he can be supported in the water, even without swimming, (provided he retains his presence of mind,) by a very trifling effort; for, while the best swimmer, by his exertions, would in no very long time become exhausted, by means of merely *floating* on the water much fatigue would be spared him, and his chance of being saved much increased. In fact to do this is exceedingly easy, for the human body is, when the chest is filled with air, as by an ordinary inspiration, of a less specific gravity (that is, weight in proportion to bulk) than the water which supports it, and, therefore, must float; and it does so naturally, having about half the head above the water; so that the person exposed to danger has only to turn upon his back, in order that that half consist of the face, and free respiration be thus secured. But, to float thus upon the water, the greatest care must be taken not to elevate the arms or other parts above its surface, and it is in remembering this caution, that presence of mind at the time of danger confers so much benefit, for, in the moment of terror, a person thrown into the water almost instinctively stretches out his hands aloft to grasp at some object, thereby depriving himself of a means of proceeding which would frequently keep him afloat until succour arrived. By elevating any part of the body in this way, we remove it from the support afforded by the water, and thus render sinking inevitable.

Mr. Nicholson in his journal relates an instructive instance of the importance of this caution. While the ship Worcester was sailing along the Ganges, at the rate of seven or eight knots per hour, a man, who was unable to swim, fell into the water. When first perceived, his head was above water; he held up his hands, and after a few seconds splashing he sank: soon after he rose again, and the officer of the ship, who had a trumpet in his hand, called out to him, "Keep your hands down in the water." He obeyed, and remained a considerable time afloat, while a boat was manned for his assistance; by a blunder of the sailors in their haste the boat was considerably delayed, and the ship was rapidly distancing him; alarmed at this, he forgot his instructions, again raised his hands, dashed them in the water, and soon sank: he however speedily rose again, and obeying the same instructions, incessantly repeated to him by the captain, by means of his trumpet, again floated. Whenever he deviated from this rule he sank, and this he did at least five times before the boat reached him, when he had been almost carried out of hearing; when taken up he was so little hurt as to be able to assist in rowing back to the ship. Mr. Nicholson concludes with the following simple rule: "When a man falls into deep water, he will rise to the surface by floatage, and will continue there if he do not elevate his hands. If he move his hands *under* the *water* in any manner he pleases, his head will rise so high as to allow him free liberty to breathe. And if he move his legs, as in the action of walking (or rather walking up stairs), his shoulders will rise above the water; so that he may then use less exertion with his hands, or apply them to other purposes."

Dr Arnott, in allusion to this subject, observes that so many persons are drowned who might be saved, for the following reasons: 1. Their believing that continued exertion is necessary to preserve the body from sinking, and their hence assuming the position of a swimmer with the face downward, in which the whole head must be kept out of the water in order to enable them to breathe, whereas, when laying on the back, only the face need be above the water. 2. From the groundless fear that water entering by the ears may drown as if it entered by the mouth or nose, and their employing exertions to prevent this. 3. The keeping the hands above the surface already alluded to. 4. Neglecting to take the opportunity of the intervals of the waves passing over the head to renew the air in their chests by an inspiration. 5. Their not knowing the importance of keeping the chest as full of air as possible, which has nearly the same effect as tying a bladder full of air around the neck would have.

We have dwelt thus long upon the power of water (especially salt water by reason of its greater density) to support the weight of the human body, as not only is it the principal circumstance to be remembered when exposed to danger of drowning, but because, when a due confidence in it is acquired, all difficulty in learning to swim soon ceases. It is to this end the practice recommended by Franklin is directed, and by reason of ignorance or forgetfulness of it, so many persons in the hour of peril, by their fruitless and injurious exertion, as it were *drown themselves*, who might by tranquillity and presence of mind be saved.

Although floating in water is sufficient to preserve from immediate danger, yet ought not the acquisition of the art of swimming to be neglected. Progression by this means depends, like the flight of birds, upon the law in mechanics of every action being followed by a corresponding action, (*i. e.* reaction,) but in an opposite direction; and, thus, the reaction of the air, compressed by the downward motion of the bird's wing, causes it to mount aloft in proportion to the force it communicates by that motion; so, the backward stroke, communicated by the simultaneous movement of the hands and feet of the swimmer, causes his forward progress in the water. When once familiarized with the support he derives from the water itself, he soon learns to make this stroke correctly, especially if aided and supported by some more experienced friend, a means far more desirable than the use of corks or bladders. Mr. Nicholson makes the following interesting remarks upon the subject:

Dr. Franklin's method of learning to swim by struggling to descend to the bottom is better calculated to give courage than skill; but at the same time it must be allowed that he who has acquired the former will require very little of the latter to become a swimmer. I have nevertheless remarked that those boys who were the most daring at plunging into the water before they could swim, have mostly arrived at the art later than others who have attended with some care to the method of striking their arms and legs. I have known several persons who, after acquiring the method of striking the arms separately, so as to have gained confidence to walk in water rising above the shoulders, and of striking the legs while the body was supported by the hands bearing on the ground in shallow water, have swam well on the first trial to combine both together. The rules for swimming swiftly and with little fatigue are few. The body must lie as near the surface, and the head as low, as conveniently may be. The knees must be kept wide asunder, in order that the obliquity of action in one leg may counteract that in the other, instead of their joint action producing a libratory motion of the body; and the stroke or impulse must be given with much more velocity than that employed in drawing the legs up again.

Many persons recommend that the motions of frogs when swimming should be observed, as so nearly resembling those employed by man.

In conclusion, we wish to impress upon all learners the necessity of knowing well the character, bottom,

* ARNOTT'S *Elements of Physics.*

depth, &c., of the places wherein they practise. To learn to swim, it requires that the water should reach at least to the shoulders, but when higher than this, or beyond the depth of the swimmer, he should never go unaccompanied by an experienced person. J. C.

The inward pleasure and satisfaction arising from the practice of virtuous actions, may be greatly overclouded in the present state by bodily diseases and misfortunes; and the inward pain and remorse generally felt on, or attending the commission of vicious and wicked deeds, may be greatly smothered, or not so much felt, from an eager pursuit after sensual gratifications, or an attendance on business and secular employments; but in another world there will be no diseases or misfortunes to overcloud the one, nor sensual gratifications or secular employments to smother or prevent the other being felt to all eternity.

The belief of a supernatural assistance is so reasonable, so consonant to our ideas of the Divine goodness and of human frailty, that philosophers, even in the heathen world, were sensible how much it was wanted, and have expressly asserted, that without Divine assistance no man could make a progress either in wisdom or virtue. What reason suggested to them, Revelation has ascertained to us, which represents us as temples and habitations of the Holy Spirit. —Rev. G. Carr.

Under the persuasion that no disaster can reach us without the permission of Him who watches over us with an eye that never slumbers, and a tenderness which nothing but guilt can withdraw from us, we can face those unknown terrors from which pagan philosophy turned away dismayed; we can look forward, unmoved, into futurity, and contemplate all the possible contingencies that may befal us, with intrepidity and unconcern; with the cheerfulness of a mind at perfect ease, reposing itself in full confidence and security on the great Disposer of all human events.—Bishop Porteus.

Labour, though it was at first inflicted as a curse, seems to be the gentlest of all punishments, and is fruitful of a thousand blessings: the same Providence which permits diseases, produces remedies; when it sends sorrows, it often sends friends and supporters; if it gives a scanty income, it gives good sense, and knowledge, and contentment, which love to dwell under homely roofs; with sickness come humility, and repentance, and piety; and affliction and grace walk hand in hand.—Jortin.

The slave who digs in the mine or labours at the oar, can rejoice at the prospect of laying down his burden together with his life; but to the slave of guilt there arises no hope from death. On the contrary, he is obliged to look forward with constant terror to this most certain of all events, as the conclusion of all his hopes, and the commencement of his greatest miseries.—Blair.

It was an excellent rule which Marcus Antoninus prescribed to himself in his private meditations: "Manage," says he, "all your actions and thoughts in such a manner, as if you were just going out of the world."

As the Supreme Being has expressed, and, as it were, printed his ideas in the Creation, men express their ideas in books, which, by this great invention of our latter ages, may last as long as the sun and moon, and perish only in the general wreck of nature. Thus Cowley, in his poem on the Resurrection, mentioning the destruction of the universe, has these admirable lines:

> Now all the wide extended sky,
> And all th' harmonious worlds on high,
> And Virgil's sacred Work, shall die.

There is no other method of fixing these thoughts which arise and disappear in the mind of men, and transmitting them to the last periods of time; no other method of giving a permanency to our ideas, and preserving the knowledge of any particular person, when his body is mixed with the common mass of matter, and his soul retired into the world of spirits. Statues can last but a few thousands of years, edifices fewer, and colours still fewer than edifices. —Addison.

FRESH-WATER FISH.

VI.

The Carp, (*Cyprinus Carpio*, Linn.)

The Carp family (*Cyprinoidæ*) is the first of the five families into which Cuvier divides his second great division or order of osseous fishes. This order (Malacopterygii Abdominales) includes those fishes whose ventral fins are attached to the abdomen, behind the pectorals, and unconnected with the bone of the shoulder. This order includes the greater part of the fresh-water fish.

All the species of the genus Cyprinus, of which the common carp is the type, are inhabitants of fresh water; most of them have the faculty of bringing their lips forward, and drawing them back, in consequence of the anterior part of the mouth being formed of very small bones, connected by elastic ligaments. The mouth is small, the jaws feeble, and very often without teeth, but with teeth on the pharynx, which compensate somewhat for their absence on the jaws. Their bodies are scaly, and they have not the soft dorsal fin which occurs in the salmon family. They are the least voracious of all the finny tribes. The different species so much resemble each other, that it is often difficult to distinguish between them. Most of them are esculent, but their flesh is not of the first quality.

The common carp is found in the fresh waters of the southern and temperate parts of Europe; and it is only in consequence of the care bestowed on them that they are found in the more northern parts of the continent. Beckman says,—

We are told that these fish were brought from Italy to Prussia, where they are at present (1797) very abundant, by a nobleman whose name is not mentioned. This service, however, may be ascribed with more probability to the Upper Burggrave Casper von Nostiz, who died in 1588, and who, in the middle of the sixteenth century, first sent carp to Prussia from his estates in Silesia, and caused them to be put into the large pond at Arensberg, not far from Creuzberg. As a memorial of this circumstance, the figure of a carp, cut in stone, was shown formerly over a door at the Castle of Arensberg. This colony must have been very numerous in the year 1535, for at that period carp was sent from Königsberg to Wilda, where the Archduke Albert then resided. At present a great many carp are transported from Dantzic and Königsberg to Russia, Sweden, and Denmark. It appears to me probable that these fish after that period became every where known and esteemed, as eating fish in Lent and on fast days was among Christians considered to be a religious duty, and that, on this account, they endeavoured to have ponds stocked with them in every country, because no species can be so easily bred in these reservoirs.

Since the time when Beckmann wrote, until the present time, the sale of the carp has formed part of the revenue of the nobility and gentry in Prussia, Pomerania, Brandenburg, Saxony, Bohemia, Mecklenburg, and Holstein; and the treatment of this useful fish has long since been reduced in these countries to a kind of system, founded on numerous experiments made during several generations in the families of gentlemen well skilled in every department of husbandry. They construct carp ponds, and stock them with a few breeders, which in a short time fill the pond. It is recommended to have three ponds, viz., a spawning pond, a nursery, and a pond for adult fish. It has been found that such ponds as are surrounded by poor, clayey soils, or are exposed to the north and east winds, or have much wood about them so as to obstruct the rays of the sun, or contain hard or very cold water, or such water as issues from mines, moors, or mosses, will never allow the fish to thrive. Water-fowl must be kept away from the ponds during the spawning season. Every full-grown carp must be allowed a space in the pond equal to a square of fifteen feet: the more room they have, the more quickly will they grow, and the oftener they are fed the better. Mr. Forster has

known them to attain the weight of twenty-five pounds by being carefully attended to. During winter, should the pond be covered with ice, it must be broken in many parts, as without the admission of air the fish would soon perish.

An extraordinary but cruel method of improving carp for culinary purposes is described in the *Philosophical Transactions* for 1754.

It is very doubtful at what time the carp was introduced into England. The year 1514 is mentioned by Fuller as the time when Leonard Maschal, a gentleman of Plumstead in Sussex, introduced the tench, but there is some reason for doubting whether we ought to give him the honour of introducing the carp also. Carp are mentioned in the *Boke of St. Albans*, published by Wynkyn de Worde, as early as 1486. This *boke* contains a treatise on fishing and several more serious tracts, compiled by Dame Julyans Barnes, prioress of the nunnery of Sopwell near St. Albans, a lady celebrated for her learning and accomplishments. The reason for her publishing the treatise on fishing in the manner in which it appears, is given by her in the following words:— "And for by cause that this present treatyse shoulde not come to the hondys of eche ydle persone whyche wolde desire it, yf it were emprynted allone by itself and put in a lytyll plaunflet; therefore I have compylyd it in a greter volume, of dyuerse bokys concernynge to gentyll and noble men, to the entent that the forsayd ydle persones whyche sholde haue but lytyll mesure in the sayd dysporte of fysshynge, sholde not by this meane utterly dystroye it." Speaking of the carp, she says, that, "it is a deyntous fysshe, but there ben but fewe in Englonde. And therefore I wryte the lasse of hym."

In this country the carp usually attains the length of from about twelve to sixteen inches; but in warmer climates it will grow to two, three, or four feet, and attain a weight of twenty, thirty, or even forty pounds. Its general colour is a yellowish olive, much deeper or browner on the back, with a slight hue of gold on the sides: the scales are large, rounded, and distinct; the head large, and the mouth furnished on each side with a cirrus or beard, and above the nostrils a smaller pair: the lateral line is slightly curved, and marked by a row of blackish specks; the fins are violet-brown, with the exception of the anal, which has a reddish cast: the dorsal fin is broad, or continued to some distance from the middle of the back towards the tail, which is slightly forked.

The carp attains a great age: specimens have been spoken of as being 150 or 200 years old. Their colour is less deep as they get old, and in advanced age it borders on white. In old age, too, they are subject to a singular malady: the head and back become covered with moss-like excrescences. This disease seems also to affect young carp which inhabit snow-water, or water which has become putrid: snow-water also produces pustulous germs under the scales, which fishermen call the small-pox. Their intestines also often contain worms, and their liver is subject to ulceration.

The food of the carp is larvæ of insects or worms, small testacea, grains, roots, and the young shoots of plants. They devour readily the leaves of lettuce, and other tender plants, which are thrown into the water. The leaves and seeds of salad, according to Blotch, fattens them more quickly than any other food. They may also be observed darting out of the water to seize the insects which hover over its surface. The concussion of their jaws or lips in eating, occasions a peculiar noise which may be heard at some distance. They can remain a long time without food, yet when it is offered them in abundance they often overfeed themselves, and perish from the effects of their gluttony.

Carps delight most in waters where the current is not strong. In summer they frequent weed beds and are particularly fond of those aquatic plants of stagnant waters which spring from the bottom and rise to the surface. In rivers they frequent the still deeps which have an oozy bottom, with rushes and reeds, where they find a convenient nidus for their spawn. During winter they conceal themselves in the mud and pass many months without food, collected side by side in great numbers. In the spring, those that inhabit running waters quit their winter abode to seek more tranquil haunts. If their progress should be obstructed by any barrier, they endeavour to leap over it by placing themselves on their side, bringing the head and tail together and then suddenly letting go this sort of circular spring.

The carp is surprisingly prolific; the quantity of roe is so great, that it is said sometimes to have exceeded the weight of the emptied fish when weighed against it. As it frequently happens with prolific animals, the greater portion of the spawn is devoured by other animals; and the young ones are exposed to numerous dangers. The carp grows rapidly, and at the age of three years it has few enemies to fear, except the otter and the larger pikes. The eggs of the carp, as well as those of the sturgeon*, are made into caviar, which is highly esteemed. The bile of the carp furnishes a green colour to painters, and was formerly used in medicine.

The carp is so tenacious of life that it may be kept for a considerable time in any damp place, though not immersed in water. In winter they may be transported to a considerable distance by packing them up in plants, in moistened linen, or in snow, and putting a bit of bread steeped in brandy in their mouth. In Holland they are suspended to the roof of a cellar in nets full of damp moss, which is frequently watered; and they are fed with bread and milk or with chopped vegetables.

They are transported to Paris in well-boats, which are often stocked at the distance of more than a hundred leagues from that capital.

The *Cyprinus auratus*, gold fish, or golden carp, has been already described in *Saturday Magazine*, Vol. XVI., p. 134.

* See *Saturday Magazine*, Vol. XVIII., p. 92.

THE CARP.

THE scandal brought upon religion, as it was not contracted by the irregularities of one or two persons, but by associated and common crimes; so neither will it be removed by a few single and private reformations. There must be combinations and public confederacies in virtue, to balance and counterpoise those of vice, or she will never recover that honour which she acquired by the general piety of her professors.

LONDON:
JOHN WILLIAM PARKER, WEST STRAND.
PUBLISHED IN WEEKLY NUMBERS, PRICE ONE PENNY AND IN MONTHLY PARTS, PRICE SIXPENCE.
Sold by all Booksellers and Newsvenders in the Kingdom.

THE

Saturday Magazine.

No. 583. SUPPLEMENT, JULY, 1841. { PRICE ONE PENNY.

A BRIEF HISTORY OF THE FINE ARTS. No. I.

TERMINAL FIGURE OF PAN.
(From the Townley Gallery.)

PHOCION.
(From a Drawing by Flaxman from the Antique.)

O Greece! thou sapient nurse of finer arts!
Which to bright science blooming fancy bore;
Be this thy praise, that thou, and thou alone,
In these hast led the way, in these excelled,
Crowned with the laurel of assenting Time.—THOMSON.

INTRODUCTION. ORIGIN OF THE FINE ARTS.

THE Fine Arts are usually understood to include those productions of human genius and skill which are more or less addressed to the sentiment of taste. Their origin has been the subject of much learned display and speculation; but considering them to be purely *imitative* in their nature and origin, and that their highest aim is, by a delicate combination, to draw to a single point the scattered excellences of nature, so as to excite pleasurable emotions, capable also of informing, elevating, and improving the mind, we must refer the invention of these arts, not to any single people, but to every country where human reason has been at all cultivated. There is a love of ornament and display naturally implanted in the human mind, and a strong tendency to copy surrounding natural objects. Even the savage finds delight in adorning his body, and passes much of his time in executing the rude carvings on his spear shaft or canoe, which simple exhibitions of his skill require only a general cultivation of the mind of the artist to raise into tasteful decorations.

The imitative arts may therefore be considered indigenous in every country; but, like the productions of the earth, they assume different forms according to the nature of the climate and the wants it produces. Not only do the fine arts exist in some form or other in every country, but we find them in about the same stage of advancement among all nations of the same degree of civilization in every age and clime. It is not therefore either necessary or philosophical to go back to the ancient Egyptians, to the Scythians, or to the aboriginal Greeks, for the origin of the fine arts. It is true that little diversity is found even among distant nations in the gradations from rude art to refined invention. In the early stages of society men of all countries closely resemble each other in their feelings, wants, means of gratification and improvement. Hence that resemblance of style which has been traced in the arts of many distant nations ought not to be taken as evidence of a common origin. The early Egyptian and Grecian statues display similar lineaments and corresponding attitudes; simply because the artists of each had to overcome the same difficulties, and brought nearly the same amount of information to bear upon them.

As the mechanical arts originated in the physical wants of man, so the fine arts originated partly in the desire to embellish the rude productions of necessity, and partly also to supply certain sensible representations of sentiments and ideas which to the circumscribed capacity of unenlightened ages must be extremely vague. "A supreme, spiritual, invisible intelligence being infinitely beyond the reach of vulgar apprehension, was under the necessity of being shadowed out to their senses through the medium of some more obvious and familiar imagery. The attributes of this intelligence—power, justice, mercy, or goodness—distinctly considered, were separately personified, and converted into objects of sense. The various passions and affections of

humanity—joy, sorrow, love, hatred, fear, and revenge—were in like manner embodied and clothed with material shape and form. To this it may be added, that the first civilizers of mankind, or inventors of useful arts, were in that rude state of nature beheld with a distant reverence, nearly allied to adoration. The advantages resulting to society by their discoveries and institutions seemed so perfectly consonant to the idea of a superior existence, that the grateful simplicity of their admirers readily subscribed to their deification. This system, then, of mythology, this state of polytheism, were, as it seems, more particularly favourable to the introduction of sculptors and painters, whose works alone could furnish sensible representations, and thus determine the object of devotion. The want, perhaps, of their earlier assistance had before that time directed the indiscriminate worship of mankind, not only to animals, but to inanimate substances, and even rude unorganized matter. —Grattan.

The early history of the fine arts, now veiled in a mist of fable and antiquity, involves details which appear marvellous and incredible, as distant objects when beheld through a dense medium, will generally assume an extravagant and unnatural magnitude. The national vanity of the imaginative Greeks was gratified in referring the origin of the politer arts to their tutelar divinities. Love, celebrated by the mythologists as the governor of nature, was the parent of the arts; and music, his first born. The first artist was a young girl, who, perceiving the profile of her lover's features cast on the wall by the strong light of a lamp, drew the first recorded outline from this cherished object of her affections. From such a trivial beginning, according to the Grecian apologue, arose those arts whose softening and humanizing qualities have moderated the barbarism of man, and alleviated the disastrous effects of vice. The Greeks represent Dædalus as the restorer of the arts after the deluge had involved in ruin all arts, whether elegant or useful, however imperfect or however improved. Although a portion of the excessive admiration bestowed on him originated probably in the ignorance of his admirers, yet he is generally esteemed the founder of the Athenian school. Before his appearance, the Grecian statues were mere shapeless stocks, their eyes closed, their arms hanging down as if glued to the body, and their feet joined without life, attitude, or gesture. Dædalus infused some spark of life into these stiff, motionless trunks; and his disciples, gradually improving, attained the difficult path which led to the production of those existing models of symmetry, elegance, and grandeur.

Although we must dismiss as groundless any theory which advocates the exclusive discovery of the fine arts, yet the attainment of excellence in the pursuit and practice of the arts generally has been easier to some nations than to others. "How far moral and physical causes operate on the genius of an age, has been a subject of inquiry frequently discussed from the days of Velleius Paterculus to our own. Certain it is, that at particular revolutions of time, some kind of supernatural influence, or, as it were, some celestial emanation, seems to descend on a particular people, lights up their invention, heightens and spiritualizes their imagination, and calls into life and action their dormant faculties. Genius will ever demand a friendly soil to flourish and dilate itself, while, like the sensitive plant, it ever shrinks and sickens at the rude touch of tyranny and oppression." We do not propose to confine our inquiry to the progress of the arts among one particular people; but among the nations of antiquity, as far as may be convenient, in chronological order.

Comparison between Painting and Sculpture.

Before we enter on the task of sketching the history and progress of the noble art of *Sculpture*, it may be well to make a comparison between it and the sister art of painting, and to endeavour to explain some of the causes which operate in producing the very different emotions, which all persons of taste must be conscious of, in viewing representations on stone and on canvass. In doing this, we shall have occasion to adopt the sentiments of Mr. Milman on the subject, and where we deem it desirable, we shall present those sentiments to our readers in the eloquent language of their author.

Sculpture and painting address the imagination through the sense of sight; and although in their essence strictly imitative of forms really existing, and whose existence is conceivable, yet by awakening and keeping alive the imagination, they become purely ideal, and present us with forms, closely adhering to their types in nature, but wrought to supernatural grandeur or beauty. To the imagination we chiefly owe the emotions of elevation, of terror, or of mild and placid delight thus excited; emotions differing with our constitutional and mental temperament, and in some respects with our habitude and familiarity with addresses of this nature. The mind breathes life and motion on the images represented in stone or canvass, and the imagination wavers from the representation to the thing represented, and forms for itself a sort of indistinct existence from the qualities of both. The ideas of motion, breath, animal warmth, are so inseparably connected with our notion of the animal form, that a figure in marble or in colour inevitably suggests what it cannot express: and in this sense imagination supplies the deficiency of art. "But previous to this address to the imagination, painting has an advantage which sculpture has not at all, or in a far less degree. The harmony of rich and brilliant colours has doubtless a gratifying effect on the sense, and produces a pleasing irritation on the organ of sight. The spotless white and glossy smoothness of marble may indeed make a sort of cool and soothing impression on the organ, but this is faint and feeble in comparison with the sensual enjoyment proceeding from the mellow contrast and rich variety of a Venetian picture. Thus painting in a manner conciliates a welcome reception by its previous flattery of the sense: for doubtless we should look with delight on a mass of hues, mingled and harmonized with the consummate art of Titian, though there were no representation of nature, but an unmeaning surface of colour. The pleasure would indeed be brief, and the subsequent dissatisfaction and disappointment of the mind at being thus neglected and sacrificed to the sense, would be unpleasant and even painful; but still the interval between the first glance and the discovery of the deficiency would assuredly be pleasurable."

A very striking advantage likewise results to painting from the wide scope afforded by perspective, and by colouring, and its consequences of light and shade. The range of objects selected for imitation is much more extensive, and the powerful aid of accessories is brought to increase the illusion. Painting has the power of fixing the attention to the point where she wishes it to center, and diverting it from what it is her interest to conceal. Sculpture on the other hand is cold, naked, and severe, without accessories to aid the illusion, and destitute of power to dazzle the sense. It must therefore be exquisitely conceived and finely wrought, before the imagination will yield to its impression, and endow it with motion and life. The concentration of mind necessary to imbibe the spirit of a fine piece of sculpture, is, however, very favourable to our enjoyment of the ideal. "Once beyond the world of positive reality, we expatiate readily, as far as the artist will lead us. It is then, after this effort and exaltation, nothing objectionable that the shapes we behold surpass all that we have hitherto seen in human limb and feature. We have already stept beyond nature, by looking on a stone with somewhat similar feelings which we experience in looking on a human being; and it is but little farther to sympathise with what differs from humanity only in its perfection, with what is incompatible with truth only in its untrue degree of excellence."

The peculiar connection of sculpture with the Grecian polytheism, and of painting with Christianity, has often attracted attention. Grecian artists appear to have known little of the breadth and depth of colouring, the magical effect of light and shade, and the delicate perspective of modern painting. The inferiority of all sculpture on Christian subjects is equally notorious. A German critic accounts for this by saying that the mind of the Grecians was, like his atmosphere, all light, while that of the Christian; like his variable northern sky, presents an interchange of light and shade. The mythology of the former was a series of self-existent beings of different powers and attributes. Many of his divinities were mere immortal men, who lost only the grosser parts of their nature, but retained their distinctive forms and qualities. The Greek artist therefore collected from the human form all that was noble and majestic, and purified it from that which was gross, or inharmonious, and thus embodied the very essence of grace, dignity, and power. The Christian, with a mind influenced by his climate, and awakened by the revelation with which he has been favoured, looks into the most important and mysterious subjects, and meditates on eternity, on his own nature, and on the relation in which he stands to the Omnipresent God. Much that is mysterious and incomprehensible meets him at every point of his inquiry, and calls for the exercise of faith and

humility. He feels that it is impossible adequately to personify the subjects which most affect him. The sublime with him has always a mixture of the vague and indefinite, and is therefore the sublime of painting, and not of sculpture. The partial sight and half revealing of objects is in the power of painting, but not of sculpture.

"From its material and character, sculpture must be defined and decisive; painting may be indeterminate and vague: in sculpture all meets the eye; in painting more often is meant than meets the eye: sculpture must show all fully and absolutely; painting but partially and indistinctly: the mind grasps the whole in sculpture; in painting it ever thinks there is more to grasp: sculpture satisfies and fills the imagination it addresses; painting excites it till its own powers fail, rather than the matter suggested to it. It is this filling and satisfying the imagination that makes unity so absolutely necessary in sculpture: all must be a balance, in harmony, a severe simplicity. Sculpture must excite one general emotion, one tone must predominate, one character pervade the whole; for the imagination, if diverted, is ever willing to wander; if it wanders, it cannot be satisfied.

"The softer magic of beauty seems also to work by a different spell in the two arts; and this appears the source of the difference. In sculpture we behold the most exquisite symmetry, a graceful melody of lineament; each feature is, as it were, the sister of the other; the hair is clustered with a light regularity. Still we feel an indescribable want; whatever emotion we have is not merely passionless, but somewhat cold. Our admiration is not merely devoid of the grosser attraction of sense, but even of feeling; the beauty is there which enraptures the mind, but not the loveliness which enthrals the heart. This want is expression, which the hue of the countenance only and the eye can give. The stronger passions alone affect the whole face, draw down the lip, arch the brow, or give a languid or contracted cast to the general features. But the mild affections speak and breathe in the colouring of the face, in the settled light or the fugitive blush, but chiefly in the eye. From these two sources the infantile smile and the maternal look of love, all those softer enchantments of beauty which need only to be truly embodied, being too fine and delicate to admit any heightening of the imagination, are in the power of the painter alone."

While it is acknowledged that painting has the power of going more deeply to the heart, and of striking those fine chords which respond not to the touch of sculpture, yet it is undoubtedly true that the contemplation and study of the faultless beauty and majesty of the statuaries' master-pieces refine the mind from what is gross; the imbibing their grand and chaste spirit nourishes that loftiness of soul and delicacy of feeling which is indispensable to true taste.

Taking this view of sculpture, and regarding it as the elder sister of painting, we proceed to notice the most ancient existing monuments of the art, and to take a brief survey of Egyptian Sculpture.

Section I. On Egyptian Sculpture.

Among the existing monuments of the ancient Egyptians, examples are found of their rudest as well as most perfect workmanship, thus favouring the opinion that we have specimens of their earliest as well as latest productions.

The institutions of the Egyptians did not permit the introduction of improvement or change, so that, for a long and unknown period up to the conquest of Egypt by Cambyses, the style of art is exceedingly rude and tasteless. The lines forming the general contour are destitute of the graceful curves of nature;—they are straight and projecting; the position of the figures is stiff and unnatural. In sitting figures the legs are parallel, the feet squeezed together, and the arms fixed to the sides; but in the figures of women the left arm is folded across the breast; the bones and muscles are scarcely discernible; the eyes are flat and looking obliquely, and the eye-brows sunk,—features which quite destroy the beauty of the head; the cheek-bones are high, the chin small and pointed, the ears generally placed higher than in nature, and the feet too large and flat. Drapery is almost absent, and the few specimens that occur only serve to show the incapacity of the hereditary artists who executed it.

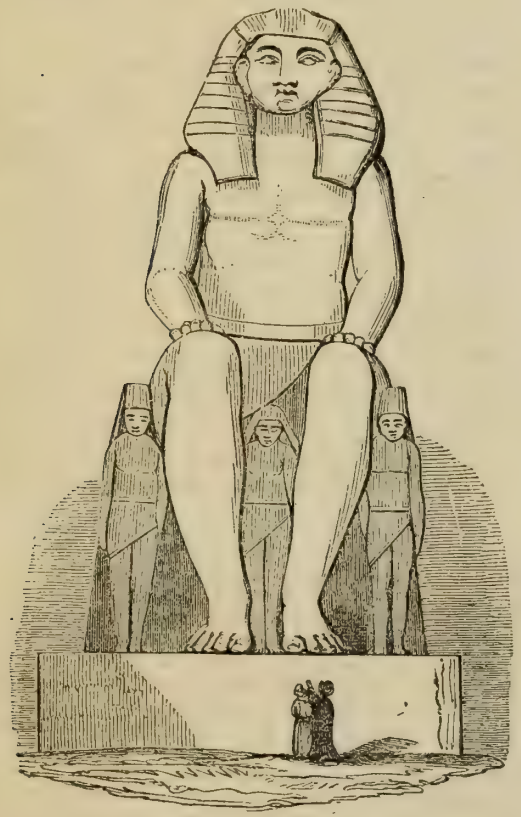
The remains of ancient grandeur still existing on their native site, and the numerous remains preserved in European museums, afford abundant means of testing the merits of the original or native sculpture of the Egyptians. These remains consist of colossal statues; groups or single figures of about the natural size; and hieroglyphical and historical relievos. These productions were not only formed by the chisel, but also carefully polished. Even those on the summit of an obelisk, which could only be viewed at a distance, were finished with as much assiduity as if they were to be subjected to a close inspection. As they are generally executed in granite or basalt stones of a very hard texture, it is impossible not to admire the indefatigable patience of the artists.

The number of colossal statues in ancient Egypt, as recorded by ancient writers, would seem incredible, were it not authenticated by numerous existing remains. These and other enormous works have struck every visitor with wonder and awe. Herodotus says, "One of their buildings is equal to many of the most considerable Greek buildings taken together;" and a modern observer remarks, "These works are so prodigious, they make everything we do look little." Another says, "The Egyptians had notions of durability in their works which no other nation has succeeded in imitating; they seemed to work as if they laughed at time, war, barbarism. Quantity was everything with them, or almost so; quality but little. They wished to please themselves and astonish posterity, and they succeeded. It would, perhaps, be impossible to adduce a more striking example of disregard of time and patience of toil than the formation of a statue of granite, sixty or seventy feet high. "Of these mighty labours," says Dr. Memes, "some are hewn from the living rock, and left adhering to the natural bed; as the celebrated Sphynx, near the Pyramids of Ghizeh, and various sculptures on the rocks of the Thebaid, which look the shadows of giants cast by a declining sun." Others appear to have been first built up of square blocks and then worked into shape. But the greater part are formed of one block of enormous dimensions. Many figures of the colossal Sphynx appear to have been ranged in considerable numbers on the opposite sides of the approach to the great temples. Some of the human colossi were isolated, and were probably regarded as objects of worship; others were used as columns. The largest statues now known are in a sitting posture; these are at Thebes; the altitude of each figure, exclusive of the lower plinth of the throne, is fifty feet, the material, red granite; the head in each figure is looking straight forward; the arms are pressed close to the sides; the palms and fore-arm extended, and resting upon the thighs; the lower extremities are perpendicular and apart. This posture, which may be described as characteristic of the entire class, is little calculated to convey any sentiment of grace or ease. Yet, in these vast, although comparatively uninformed labours, we discover more of the sublime than arises from mere vastness, or even from the recollections of distant time with which their memory is associated. They are invested with a majestic repose—with a grand and solemn tranquillity, which awes without astonishing; and, while they exhibit the greatest perfection to which Egyptian art has attained, in colossal statues generally, we discover occasional approaches to truth and nature, with no inconsiderable feeling of the sweet, the unaffected, and the flowing in expression and contour."

Some of the earliest efforts of Egyptian sculpture seem to have been made, not upon detached masses of stone, but upon the rock itself, in the process of excavating caverns for the purposes of devotion. Such statues do not greatly exceed the natural size, and, being detached when finished, were removed to other situations, and frequently copied in detached blocks. Hence, probably, arose that singular feature in Egyptian statues, viz., a pilaster running up the back of the figure. In the remains of sculpture preserved in the excavations of Philoe, Elephantis, Silsilis, and at El-Malook, in the tombs of the Theban kings, the ornaments vary from simple relievos to complete statues. In these latter, the figures are not completely detached, a posterior portion being always left adhering; while, if the statue be formed by cutting round a recess, a pilaster behind runs up the whole height, intended probably to save labour, or to increase the strength. When such statues are detached for the purpose of removal, the pilaster is still retained, probably from the same motives or perhaps in order to obtain a surface for the inscription of hieroglyphics, or probably from a blind adherence on the part of the sculptor to the types left him by his ancestors. There is a remarkable sameness about all these efforts: the design and the attitudes are strangely limited, altogether showing the operation of prescriptive rules and fixed models, whereby the skill and imagination of the artist were almost as effectually constrained, as the productions of his chisel.

The surfaces of many of the ancient Egyptian structures are frequently covered with relievos. In these, where variety of action and situation is required, the Egyptians display their deficiency in the knowledge of anatomy, mechanics, and geometry. In all these monuments the king or hero is represented three times larger than the other figures. Whatever is the action,—a siege, a battle, taking a town by storm,—there is not the smallest idea of perspective in the place, or magnitude of figures or buildings. Figures in violent action are equally destitute of joints, and other anatomical form, as they are of the balance and spring of motion, the force of a blow, or the just variety of line in the turning figure. "In a word," continues Flaxman, "their historical art was informing the beholder, in the best manner they could, according to the rude characters they were able to make. From such a description, it is easy to understand how much their attempts at historical representation were inferior to their single statues."

It must however be mentioned, that occasionally, in the historical relievos, there appear the rudiments of higher art, with less of convention, and more freedom of imagination. The hero of the piece is always represented in the bloom of youth, and there is something approaching to grandeur and beauty of conception, in his figure as represented on some of the monuments. Yet these separate excellencies are completely obscured by the absurdity of representing him at least double the stature of the figures surrounding him.



EGYPTIAN COLOSSAL STATUE.

Winkelman has attempted to class Egyptian sculpture into three periods or epochs: The first he calls the ancient epoch, which was the era of original or native sculpture, including the time which elapsed from the origin of the Egyptians to the reign of Cambyses, in the sixty-second Olympiad, or five hundred and twenty-six years before Christ: the middle epoch, or era of Greco-Egyptian sculpture, embraces the period during which Egypt was under the dominion of the Persians and Greeks: and the third, or last, being the era of imitative sculpture, improperly denominated Egyptian, prevailed about the time of Hadrian. By a subsequent alteration of his plan, Winkelman extended the first of his periods to the establishment of the Greeks under Alexander the Great and his successors. This extension of the ancient period is generally considered just, for Plato, who flourished about a hundred and thirty years after Cambyses, expressly states that in painting and the other imitative arts, the Egyptians had made no change; their productions were neither more beautiful, nor worse, than in remote ages. The art of sculpture, like the other arts, was in Egypt subject to strict laws, and all works of a religious nature were subject to the forms and attitudes prescribed by the authority of the priesthood. The constitution of the Egyptian government was likewise opposed to changes and innovations of any sort, and even the trades and professions of the people were made hereditary in the respective families. The exertions of art were necessarily feeble under such a system as this: taste and invention were excluded; artistical ambition was kept down; and the arts remained unchanged for ages. All the sacred figures of Egypt present a resemblance, or rather identity, which renders it very difficult to fix the relative antiquity of the specimens: in general, the information is gathered rather from the situation in which the figure is found, and the signs of rude antiquity or of Grecian art which surround it, than from any evidence presented by the statue itself. The representation of animal and vegetable forms could hardly be subject to the same strict laws, and it is here that we expect to find some tokens of the various degrees of ability in artists. Accordingly we find a nearer approach to correctness of form and natural roundness of figure in representations of animals, than in the sculpture of the human shape.

The materials used in Egyptian sculpture were wood and stone, metal and clay. The wooden figures often found on mummies are of the native Sycamore of Egypt, and this was also, probably, the material of their larger statues in wood. Herodotus tells us that King Amasis sent two wooden statues of himself as a present to the temple of Hera (Juno) in Samos. The same historian informs us, that the high priests of Jupiter at Thebes, preserved the remembrance of their priesthood by each making, during his lifetime, a colossal wooden figure of himself; and that as many as three hundred and forty-five were to be seen at Thebes, when Herodotus visited that city. Belzoni found two wooden figures of very fine workmanship in the tombs of the kings at Thebes; these were about seven feet in height.

In their labours on stone, the Egyptians employed several kinds of material: one soft, a species of sandstone; and three very hard, a calcareous rock out of which the tombs, with their sculptures, are hewn; basalt or trap of various shades, from black to dark grey, generally used in the smaller statues; granite, more commonly of the description named by mineralogists *granites rubescens*, of a reddish hue, with large crystals of feld-spar; or of a dark red ground, with black specks, as in the magnificent head in the British museum known as the head of Memnon. The latter description of granite is rarely used. Small figures have been found of a composition similar to the bronze of later times, but metal appears to have been sparingly used. In the tombs, small images of porcelain and *terra cotta* are not unfrequent.

Differing from the views of Winkelman with regard to the epochs of Egyptian sculpture, Dr. Thomas has come to the conclusion that there was but one period really characteristic of the nation, and that the genius of this indigenous and aboriginal art is to be discovered only in the most ancient monuments; it having suffered various changes under the Greeks and Romans. The methods employed by the Egyptian sculptors in working their materials, are matters of mere conjecture. Modern tools are found to make little impression on their porphyry, granite, and basalt, and our ideas become confused, when we reflect upon the amount of patience and labour required to produce only a few of those gigantic forms, which are scattered in such profusion throughout that remarkable country. The great proof of the superior antiquity of Egyptian sculpture over that of Asia is found in its uniform simplicity; the grand lines of composition are few, accessories are sparingly introduced, and where they are made use of, they bear the same sober, massive character. While many of those nations once possessing the finest regions of Asia, have left scarcely a single memorial of their ancient greatness, and while a shapeless mass of ruins remains in some cases the sole testimony of their proudest works, the monuments of Egypt seem to bid defiance to time and change, and to stand in their stern majesty as a lasting example of the perseverance and toil of a most extraordinary people.

Section II. On Tuscan Sculpture.

Of Phœnician sculpture we shall not attempt any description. We read of temples adorned with statues, and glittering with gold and emeralds, but all their great works

nave been destroyed, and the medals of the Carthaginians (though this people was a colony of Phœnicians) do not permit us to judge of the merits of their ancestors.

The Etrurians, Etruscans, or ancient Tuscans, called by the Greeks Tyrrhenians or Tyrsenians, and by themselves Rasena, are the people who inhabited ancient Etruria, and who at a period when the rest of Europe was immerged in ignorance and barbarism are said to have attained a high degree of civil and social refinement; they are also said by some writers to have made considerable progress in sculpture, at an earlier period than the Greeks; but this opinion has been doubted by many, and it is even doubted whether the Etruscan has any right to be considered a distinct school of sculpture. Works of art were probably executed in Etruria, previous to the arrival of the Greek colonists in North Italy and South France; "but," says a writer on this subject, "the more rude and ancient specimens are exactly in the style of the very ancient Greeks; from whom they appear to have learnt all they knew; and whose primitive style they continued to copy, after a more elegant and dignified manner, founded upon more enlarged principles, had been adopted by the Greeks themselves. Hence their works may be justly considered as Greek, or, at least, as close imitations of the Greek; they having followed their archetypes strictly and servilely, though at a great distance, if reckoned by the scale of merit. The proximity of Italian colonies, where the arts were cultivated with the most brilliant success at a very early period, afforded them the most favourable opportunities of obtaining instruction; and if they availed themselves of it at all, it is rather wonderful that their progress should have been so slow and comparatively imperfect."

ETRUSCAN PATERA.

Another writer on this subject says:—

"The renown which belongs to a nation that excelled in the arts, has become, as it were, the inheritance of the Etruscans. But, from the peculiar constitution of government and society in ancient Etruria, it has been conjectured, not without appearance of reason, that the works in bronze and clay, and the bas-reliefs attributed to them, were the produce, not of the dominant race, but of their subject bondsmen or serfs; and that in reality the Etruscans, properly so called, were as little given to the arts as the Romans, by whom, in their turn, they were subdued. The striking difference observable between Tarquinii and Arretium in their works of art, seems to correspond with the different origin of the earlier inhabitants of Northern and Southern Etruria. Volaterra was naturally led, by the stone quarries in its neighbourhood, to engage in the works for which it became celebrated. The two former cities, however, wrought only, or chiefly, in clay. Arretium made red vases, with elegant figures in relief, in a style altogether peculiar. Those of Tarquinii were painted, and both in colour and design resemble some discovered near Corinth, of which Dodwell has given engravings. Painted vases are found only in the district of Tarquinii, and where they occur those of Arretium are never met with; besides, they differ from the Campanian in all those peculiarities for which the Greek works of the same kind are distinguished. The resemblance which is thus found to exist between the vases of Tarquinii and of Corinth irresistibly reminds us of the story of Demaratus, who is said to have been accompanied by the potters Euchir and Engrammus; a circumstance evidently designed to express that Tarquinii derived from Greece her skill in handling clay, and the elegant drawing with which her vases were adorned. The earliest Etruscan statues were of clay; but the statues belonging to the first ages of Rome were almost uniformly of bronze, and the master-pieces which shed lustre on Etruscan art are all of the same material. That this art received its refinement from the Greeks, cannot, we think, be reasonably questioned. Works of primitive antiquity attest its original rudeness; and to the Greeks alone, improving on Egyptian models by a close study of the finer forms and proportions of nature, belonged that skill which throws life and beauty into the delineation of the human figure. Hence the subjects of many of the most beautiful Etruscan works of art are obviously taken from the Greek mythology, which, in Etruria, was found as well adapted to the purposes of the artist, as in the land to which it was native. But the Etruscans, when their taste had once been formed, treated their own conceptions in the spirit of their masters; and, though no doubt inferior in grace and delicacy of execution, they acquired a correctness in drawing which may almost be stated as a national characteristic. In the she-wolf of the Capitol, we have an example of the perfection to which Etruscan art had attained about the middle of the fifth century of Rome; nor are the finest gems probably of a much more recent date*."

The authenticity of many of the specimens, called Etruscan, which have reached our times, is liable to be questioned. Of the statues in marble, it is difficult to say whether they are early Greek or Etruscan; the smaller ones in bronze are less to be doubted, being household divinities or merely ornaments. On the ancient relievos found in various parts of Italy, several are admitted to be genuine Etruscan; but the more elegant examples are believed to have been executed after the conquest of Etruria by the Romans, two hundred and eighty years before Christ.

The style of Etruscan sculpture is hard and overcharged, and became proverbial among the Romans on account of these defects. Quinctilian has expressly noticed it, and, when speaking of the work of some Greek sculptors, says, "Callon and Egesias made statues in the harder styles, and very like the Tuscan figures: Calamis introduced a style which was not so stiff, and Myron made figures still more soft and bending." The most curious and interesting among Etruscan remains belong to the class of engraved bronzes, or *patcræ*, small vessels used in sacrificing; circular, and, in the single instance of the Etruscan, with a handle. Etruscan gems are also of exquisite workmanship. Gem engraving was brought to great perfection at an early period, both in Italy and Greece.

Section III. On Grecian Sculpture.

We come now to the history of Grecian sculpture, and to the consideration of the causes which produced so great a superiority in the works of the artists of Greece, over those of all other nations. Ancient history informs us, that the Greeks did not emerge from a state of barbarism till long after the Egyptians, the Chaldeans, and Indians had arrived at a considerable degree of civilization. By means of colonies from Egypt and Phœnicia, the original rude inhabitants of Greece were gradually civilized and led to adopt the arts and the religious worship of those countries. The first efforts of Grecian art were rude, and in no way superior to those of other nations; and the ancient, or *archaic* period, as it is called, of Grecian art extended through eight almost unknown centuries nearly to the time of Phidias.

A variety of causes appear to have contributed in rendering the Greeks famous as sculptors. Their beautiful country was peopled, by the warm imagination of its people, with those beings, either divine or heroic, which constituted its theology. Their winding streams, flowery plains, and azure mountains, were looked upon as at once the residence and the representatives of these beings, and it is no wonder that attempts to present these objects in a more tangible form should lead to the exercise of skill, and should excite the emulation of ardent minds. The influence of climate over the human body is too evident to require that we should dwell on it here: and we may say with a modern writer, "Perhaps no country in the world enjoys a more serene air, less tainted with mist and vapours, or possesses, in a higher degree, that mild and genial warmth which can unfold and expand the human body into all the symmetry

* *Encyclopædia Britannica.*

of muscular strength, and all the delicacies of female beauty, in greater perfection, than the happy climate of Greece; and never was there any people that had a greater taste for beauty, or were more anxious to improve it."

The opportunity given to artists of studying their models in the public places, where the youths of Greece performed their exercises quite naked, may also be mentioned as a reason for the wonderful progress of this people in sculpture. Also, the high regard bestowed on those who attained to eminence in the art. "An artist could be a legislator, a commander of armies, and might hope to have his statue placed beside those of Miltiades and Themistocles, or those of the gods themselves. Besides, the honour and success of an artist did not depend on the caprice of pride or of ignorance. The productions of art were estimated and rewarded by the greatest sages in the general assembly of Greece; and the sculptor who had exercised his task with ability and taste, was confident of obtaining immortality."

We have already spoken of Dædalus, the first sculptor among the Greeks who attained sufficient celebrity to ensure the existence of his fame. More than one artist, however, bore the name of Dædalus, and, indeed, this name among the ancients, appears to have been synonymous with universal genius; for Dædalus is said not only to have constructed the labyrinth of Crete, but to have been the inventor of the wedge, and of wings, besides being the greatest sculptor of his time. His invention of wings is said to have formed his means of escape from Crete, to avoid the revenge of Minos. Some understand this merely to mean that he put sails to the vessel which bore him from the island. The works of Dædalus were in wood: the first Greek sculptors that became famed for working marble are said to have been Dipœnus and Scillis, about 580 years before Christ. At about the same period the art of casting brass, and melting it into statues, was taught by Rhœcus and Theodorus, both Samians. The plastic art, or modelling in clay, appears to have been known considerably earlier. A fragment of a statue, believed to be the work of Rhœcus, is now in the British Museum. It is a head of Diomede of the size of life, and forms one of Mr. Knight's collection of bronzes.

It would be foreign to our purpose to give a list of the numerous sculptors who adorned the age previous to the birth of Phidias. The little islands of Samos and Chios produced many skilful artists, and the cities of Sicyon, Ægina, Corinth, and Athens, whence arose the primitive schools of Greece, still continued to send forth sculptors worthy of their ancient celebrity.

The birth of the great master of the art of statuary, the renowned Phidias, took place at Athens, in the 73rd Olympiad, about four hundred and eight years before Christ. His mind is said to have been early adorned with all the knowledge which bore on his profession. He was skilled in history, poetry, fable, geometry, and the optics of the day; and under the reign of Pericles, who commanded the treasury of Athens, and the allied states, he had the most favourable opportunities of exercising his talents. His chief talent appears to have lain in representing the divinities of his country. Cicero tells us that he did not copy visible objects, and thus represent their features and resemblances, but formed to himself an idea of true beauty, upon which he constantly fixed his attention, and which became at once his rule and model, and guided at once both his design and his hand. To the direction of this remarkable man, the public works of Athens were consigned, and under his superintendence the celebrated temple of the Parthenon was produced, the beauty of whose embellishments may be gathered from the remains of exquisite statues and alti and bassi relievi now in the British Museum and known as the Elgin Marbles. The Temple of Apollo Epicurius near Phygaleia was the work of the same master-mind, and it is believed that the Phygaleian (now also in the British Museum) were the early, and the Parthenon sculptures the finished, productions of Phidias's school.

The statues in bronze executed by Phidias, were, in point of number and excellence, quite unrivalled. His ivory statues* were also without parallel; and he even condescended to work in the meaner materials of wood and clay. Pliny and Pausanias have given us some account of the different methods used by Greek sculptors in the fabrication of their metal statues. The latter historian describes a brazen statue of Jupiter at Lacedæmon, the most ancient of all the works in that metal then known. This statue was of hammer-work, fabricated in separate portions, which were afterwards closely riveted together. The artist was Learchus, said to be a disciple of Dipœnus and Scillis, if not of Dædalus himself. Several statues of this hammer-work, made by Gitiadas, a citizen of Lacedæmon, were extant in the time of Pausanias. An improved method appears to have been subsequently adopted, the statue being formed from laminæ, placed one over another, like the weaving of a garment; that is, of plates carved and chased into the forms required. The casting of brass was afterwards discovered, as we have said, by Rhœcus and Theodorus. The latter artist, it appears, likewise cast figures in iron. The discovery of the art of soldering iron is attributed to Glaucus, a native of Chios; and among the works in that metal noticed by Pausanias, are a group of Hercules and the Hydra, by an artist named Tisagoras, and the heads of a lion and a boar, which he saw in Pergamus, dedicated to Bacchus. He also mentions a statue of Epaminondas made of iron.

We now proceed to give a brief account of the ideas of the Greeks concerning the standard of beauty in the different parts of the human body.

With respect to the head, their ideas of beauty were consistent with a noble and dignified expression, as may be observed in what we call a Grecian style of countenance at the present day. The profile of such a countenance consists of a line almost straight, or marked by such slight inflections as are scarcely to be distinguished from a straight line. The forehead and nose, in the case of young persons, form a line very nearly approaching the perpendicular.

The ideas of the Greeks respecting the forehead were very different from ours. Ancient artists and writers inform us that they reckoned a small forehead a mark of beauty, and a high forehead nothing less than deformity. To preserve the oval form of the face, it was customary to represent the forehead as partially hidden by the hair, which made a curve about the temples, and thus prevented the angular appearance of the upper part of the face, which would result from too great an exposure of the forehead. From similar ideas respecting beauty, the Circassians wore their hair hanging down over their foreheads almost to the eyebrows. As to the eyes, their form was deemed of more importance than their size, though large eyes were generally considered beautiful. In sculpture the eyes were always sunk deeper in the head than is natural, because by deepening the cavity the statuary increases the light and shade, and gains expression. In the statues of the different deities, the eye forms a very characteristic feature. The eyes of Apollo, Jupiter, and Juno are large and round. Those of Pallas are also large, but shaded and softened by the lowering of the eyelids. In the Venus de Medicis we have an example that large eyes are not essential to beauty. In this inimitable statue, the eyes are small, with the lower eyelid raised a little, and imparting an air of peculiar sweetness. The beauty of the eyebrows consists in the sharpness of the bones, and the fineness of the hair. The masters of the art considered the joining of the eyebrows a deformity, though it is sometimes found in ancient statues.

Much of the expression of the face depends upon the form of the mouth; much more, in fact, than can be imagined by a person who has not attempted the delineation of the human features. In beautiful statues, the lower lip is always fuller than the upper, in order to give an elegant rounding to the chin. The teeth were very seldom allowed to appear. The Grecian artists never admitted a dimple, except to distinguish individuals, for they considered it by no means beautiful.

Remarkable was the care and attention bestowed by the ancients on the execution of the ears. In their portraits they were as careful to secure an exact likeness of the ear, as of any of those features on which it is customary to lavish the principal share of attention. The careful finish of the ear is frequently sufficient of itself to distinguish an ancient statue from one of later times. Another distinguishing mark of antiquity is afforded by the manner in which the hair was formed. On hard and coarse stones the hair was short, and appeared as if it had been combed with a wide comb; in marble statues it was curled and flowing. In female heads, the locks were thrown back, and loosely tied behind in a waving manner; in very young persons the hair fell naturally over the shoulders.

The most perfect necks of youths, in ancient sculpture, are nearly circular, like a portion of a column. The commencement of the arms as they are affixed to the body has a bold and rounded form, and the whole of the limb, from its

* For an interesting notice of the *Ivory Statues of the Ancients*, see *Saturday Magazine*, Vol. XVI., p. 51.

union to the trunk down to the wrist, is a diminishing cylinder. The hands of young persons were moderately plump, with little cavities or dimples at the joints of the fingers. The male hand and finger had more breadth and flatness, and the knuckles were more square and decided even in youth. The female hand was more rounded and fleshy, and the fingers more decidedly tapering and cylindrical than those of the male. The terminating joint was not bent as it appears in modern statues. The nails in men are more squared, and in women more rounded, long, and delicate. The ravages of time have indeed deprived a great number of the ancient statues of hands and feet, but from those which remain it is evident that the artists of those times were anxious to reach perfection in these as well as in the more conspicuous parts of their work. As the ancients did not cover the feet as we do, they studied them with much attention, and gave to them the most beautiful turning. Winkelman remarks that it is very rare to meet with beautiful knees in young persons, or even in the elegant representations of art. He states that the best-turned knees and most beautiful legs are preserved in the Apollo Saurocthones in the Villa Borghese; in the Apollo which has a swan at its feet; and in the Bacchus of the Villa Medicis. The breasts, in statues of men, were broad and elevated; in women, consisting of a gentle elevation only. The female figure is generally one-tenth shorter than the male; the bones are more straight, and less rugged towards the joints; the forms of the body and limbs are more rounded. The shoulders of the female are narrower in proportion than those of the male; the loins are narrower, and the hips broader. In infancy the proportions are of course extremely different, and there is a general roundness of limbs and body, little distinguished by the marking of bone at the joints, or projecting muscle between the joints.

It seldom or never happens that equal perfection is found in every part of the same individual; hence, it becomes necessary that the sculptor should select the most beautiful parts from different models; and that with such judgment and care, that all these detached beauties may form a complete and symmetrical whole.

The Greek sculptors were very skilful in the disposition of the drapery in their figures, which was always so arranged as to heighten the general effect. The description of the vestments of the Greeks as given by Flaxman may be stated in an abridged form, that we may the better understand the draperies we find on antique statues. The largest and coarsest woollen garment worn by the men was the *pallium*, a large piece of cloth, square or nearly so, and seven feet in length, though considerably less in width. This was generally worn by being folded over, perhaps one-third of the breadth, one end applied to the left side of the body, carried under the right arm, and thrown over the left shoulder in front; it formed broad and simple masses before and behind, with a few bold and distinct folds, which left the body and limbs well accounted for beneath. It was, according to the convenience of the wearer, thrown in a variety of different manners: sometimes one arm was wrapped in it, sometimes the other, and sometimes nearly both: all the statues of philosophers, except the Cynics, are clothed in this manner. There were other garments much resembling the pallium; particularly the manly *peplus*, the chief difference in which was the finer texture of the material, and the more numerous folds into which it consequently fell. The corners of this garment were sometimes ornamented with tassels, or knots.

Of a still finer and lighter description was the *chlæna*, a garment of smaller size than the peplus, but still in the shape of a long square. This garment is particularly appropriate to youthful heroes. The *tunic*, or *kiton*, was an under garment also worn by men in early times; this had no sleeves, and hung over the left shoulder, leaving the right shoulder entirely bare, not to impede action; in after times it had short sleeves, was full in the body, and when not girded hung down below the mid-leg; but, when collected by the girdle, did not reach lower than the knees. This seems to have been made in general of the same material with the chlæna. The *chlamys* is a military and hunting cloak, fastened with a button on the right shoulder, as that worn by the Apollo Belvidere.

The dress of the Greek women was not materially different from that of the men. The tunic was generally made to pass over each shoulder, except in the case of Amazons, or female warriors, who sometimes had the right shoulder left bare; the tunic of females reached to the feet, and was lower than the ankles, even when girded with a zone. It was made of a finer material than that worn by men, and produced long and variegated folds without lessening the distinct appearance of the figure underneath. The *peplus*, or long veil, is described as a dignified garment by Homer; it was worn in the same manner by women as by men, and is a characteristic of dignity, as Juno, Minerva, Vesta, and Ceres, are seldom or never seen without it in a placid state. Besides the tunic or kiton, the dignified Greek females had another garment called the *peplo-kiton*, which appears to have been one piece of cloth doubled over at the top, folded round the left side, the left arm having passed through the top. It was open on the right side, which presented two cascades of folds. This garment is very commonly represented on Greek vases. Many other garments were worn by women, and answered in some measure to those in use at the present time, but they are of less consequence to notice than the vestments above described.

It remains to notice the Roman toga, so entirely appropriated by the Romans, that they are thence called *gens togata*. Collected in its folds it appears to have been of an oval figure, through the opening of which, the head, the right arm, and half the body on the right side passed, the garment resting on the left shoulder, being supported by the left hand, falling below the middle of the right leg, and presenting almost innumerable curvilinear folds, which encircle the figure before and behind from the left shoulder downwards. A lap of this garment was brought from behind over the left shoulder, tucked into the upper part in front under the right breast, which fold was called the *cinctus Gabinus*, and was said to be a fashion brought from the city of Gabia. It was worn by emperors, consuls, noblemen, and Roman citizens; in general, it was made of a fine woollen cloth, as most of the Roman garments were.

"In reflecting on the beauty of drapery," says Flaxman, "we must always refer to the beauty of the human figure, which it covers; and as garments are worn as a defence against the weather, or from motives of modesty, they should never be such an incumbrance as to impede action or overload figure, either by their quantity, or mode of wearing; which rule being observed, the general idea of form and action will always be intelligible underneath; and thus, however the figure may be covered, the plainer parts of the garment will give a breadth of light and shadow to the mass, and its folds a beautiful variety of form, either in harmony with, or in opposition to, the form of the limbs and body. The cascade, or zig-zag fold of a long full garment hanging from the shoulder towards the feet, by the irregular geometrical effects of its light and shadow, shade the undulations of living forms on the opposite side of the figure, whether covered with drapery or not, with an advantageous variety.

"The fine and web-like draperies, such as that of the Flora Farnese, show all the forms of the body and limbs, with nearly the same distinctness as if they had remained uncovered, at the same time that the gentle radiated curvilinear folds, upon a near examination, contrast the beautiful forms of the body by variation of lines tenderly assimilated with the flesh, in such a manner as induces the spectator to believe that the least motion of the body will produce a different, and equally pleasing new arrangement of the drapery."

Grecian sculpture in general, may be distinguished as appertaining to the ancient style, the grand style, or the graceful style. The most authentic records of the ancient style are medals containing an inscription, which leads us back to very distant times. The writing is from right to left, in the Hebrew, and this alone is sufficient to prove their antiquity, since the practice was abandoned in the time of Herodotus. The statue of Agamemnon, at Elis, which was made by Ornatas, has an inscription from right to left. This artist flourished fifty years before the time of Phidias. In the primitive schools of sculpture, from the time of Dædalus to that of some of the more immediate predecessors of Phidias, (a period embracing several centuries,) sculpture can scarcely be considered as a regular art. The founders of those schools, with their pupils, were little more than ingenious mechanics, who followed carving among other avocations. Such were Endæus of Athens, celebrated for three statues of Minerva; Æpeus, immortalized as the fabricator of the Trojan horse; Icmulous, spoken of in the Odyssey as having sculptured the throne of Penelope; and many others who kept up the knowledge of sculpture during the heroic ages, though they appear to have made but

little improvement in the art. The schools of Crete, of Samos, and Chios have been already spoken of. The Chian school claims the praise of having first introduced the use of the material to which sculpture is mainly indebted for its perfection, namely, marble. Malas, the father of a race of sculptors, and who is said to have lived about six hundred and forty-nine years before the Christian era, was the first to make the application of this material; and the beautiful marbles of their native island furnished to him and his successors, one rich means of superiority.

The age of Dipœnus and Scyllis, brothers, and of the school of Sicyon, forms an era in the history of ancient art, marking the first decided advances towards the succeeding style. Before their time the style of sculpture had been extremely dry and minute. The designing was energetical, but harsh; it was animated, but without gracefulness; and the violence of the expression deprived the whole figure of beauty. While the limbs and countenance were rude and incorrect in form and expression, the ornamental details were worked with the most elaborate care. This taste for extreme finish arose from the limited resources of the art itself, from the manner of dressing prevalent at that period, and more especially from the mediocrity of artists, leading them to bestow on parts, that application which should have been directed towards the perfecting of the whole.

The fault of fastidiousness and ill-bestowed labour also attaches to the works of the artists we have named, but a great improvement was effected by them, and their names are therefore deservedly recorded as the benefactors of the art in that period. Their execution was much more free, the whole effect more powerful, and the forms better selected and composed. There are at present in the British Museum, colossal heads of Hercules and Apollo, believed to be the work of Dipœnus and Scyllis, which admirably illustrate the style of art at this early period.

Sculpture was now practised throughout a large extent of country, and the school of Magna Græcia, which had long been rising in importance, now began to vie with those of Sicyon, Chios, &c. Five hundred and seventeen years before Christ the fame of all preceding sculptors suffered by the reputation of two Chian brothers, Bupalus and Anthemis, who brought to a high degree of perfection the discovery of their ancestors,—sculpture in marble. Their works were highly valued in succeeding ages, and formed part of the treasures removed to Rome by order of Augustus. The arts flourished at Athens under the government of Pisistratus, and under his protection many esteemed artists employed their skill with advantage to themselves and their country. A corresponding zeal for the arts, and for sculpture in particular, now manifested itself in various parts of Greece. The victory of Marathon, which took place four hundred and ninety years before the Christian era, gave fresh life and energy to the institutions of Greece, and by the artists of this period up to the time of Pericles the grand style was practised, and finally, by the renowned Phidias, brought to perfection. Of the immediate predecessors, or early contemporaries of Phidias, the following are a few of the principal names. Onatas and Glaucias of Ægiha, Critias, Calamis, Pythagoras of Rhegium, Polycletus, Scopas, Alcamenes, and last and greatest of the early school, Myron. From the severe and simple majesty of the grand style a progressive change commenced even in the life-time of Phidias, to one of more studied elegance and softer character. "Sublimity," says Dr. Memes, "is in its own nature a more simple sentiment than beauty, and the sources whence it springs infinitely more limited. If, then, we find the true sublime in Grecian sculpture confined almost to the age and labour of one man, is this to be wondered at, when the same is the case, not only in their poetry, an art far more abundant in resources, but in the poetical literature of every people? The sculptors, then, who followed the era of Pericles to the death of Alexander, can be called inferior to Phidias, only in the same sense as the poets who succeeded will be termed inferior to Homer. In both instances, the change was but the application of principles, which in their essence could not vary, the subjects requiring a modification of certain distinguishing qualities.

The third style of Grecian sculpture was the graceful or beautiful. It was introduced by Praxiteles and Lysyppus. They designed to please rather than to astonish by their performances, and to raise admiration by giving delight. Praxiteles was a native of Magna Græcia, born about three hundred and sixty-four years before Christ. "Finding the highest sublimities in the more masculine graces of the art already reached, perceiving also that the taste of his age tended thitherwards, he resolved to woo exclusively the milder and gentler beauties of style. In this pursuit he attained eminent success. None ever more happily succeeded in uniting softness with force,—elegance and refinement with simplicity and purity: his grace never degenerates into the affected, nor his delicacy into the artificial." Among the known works of this master are his Cupid, Apollo, the Lizard-killer, Satyr, and Bacchus with a Faun. The celebrated Venus of Gnidos was his work.

Lysippus, a Sicyonian, contemporary and rival of Praxiteles, is said to have wrought only in metal. This sculptor was born in the lowest walks of life, and was in a great measure self-taught. He was a diligent follower of nature, and seems to have been distinguished by a more masculine character than was common in art at that period. He produced colossal and equestrian statues in bronze, and his Tarentine Jupiter, sixty feet in height, was equal in magnitude to any of the undertakings of preceding sculptors. Alexander showed this artist particular favour, and to Lysippus alone was granted permission to cast the prince's statue. He also executed twenty-one equestrian statues of Alexander's body-guard who fell at the Granicus. Not only was he famous in works that demanded a forceful and vigorous composition, but he also excelled in delicacy of finish, and knowledge of symmetry. So great was the renown of this artist, that even the tyrannical Tiberias was seized with apprehension at an insurrection of the Roman people, caused by the removal of the figure of Lysippus from one of the public baths. On the death of Alexander, a fatal and immediate decline was visible in the fine arts, and the period of that decline extended from the dismemberment of the Macedonian empire to the final reduction of Greece into a Roman province,—a space of nearly two hundred years.

The unrivalled excellence of Greek sculpture is sufficiently attested by the works of ancient art still remaining; some of the most highly famed of these are as follows:—The Apollo Belvidere, justly deemed one of the most admirable works of Grecian art; the Dying Gladiator, greatly valued for its truth and beauty, and its admirable execution; the statues of Venus, Diana, Mercury, and Bacchus, illustrative of the best days of Grecian sculpture; the Faun of the Florence Gallery, restored by Michael Angelo. The ancient groups are perhaps yet more precious monuments of the sublimity, beauty, and heroism of Greece. The Laocoon, animated with the hopeless agony of the father and sons, is the work of Apollodorus, Athenodorus, and Agesander of Rhodes. The groups of Dirce, Hercules, and Antæus, Atreus, Orestes, and Electra, and Ajax supporting Patroclus, are examples of fine form, character, and sentiment. Niobe and her youngest daughter, by Scopas, is esteemed an exquisite specimen of art. The difficult but harmonious composition representing the Wrestlers must not be omitted, nor, for graceful proportion, Cupid and Psyche. The Elgin marbles, belonging as they do to a period when the art had reached its highest excellence, may well be considered a peculiar treasure to the British nation. For further particulars respecting these marbles, we refer our readers to the *Saturday Magazine*, Vol. XVI., p. 217 and 233.

Our frontispiece represents two antique figures illustrative of ancient Grecian art. One is a terminal statue of Pan playing upon a pipe. He is generally represented naked, but the long robe with which he is here clothed, and the diadem which decorates his head, not only evince the custom but likewise show the manner in which the ancients occasionally clothed the statues of their deities.

In this figure "the act of breathing into the instrument is so admirably expressed, that we may almost fancy we hear the sounds of the music; and it is not improbable, that this statue may be a copy of the one which gave rise to the Greek epigram of Arabius. The point of this epigram is, that the artist had animated the figure of Pan, by infusing breath into it."

The other figure is that of Phocion, an Athenian commander, one of the most virtuous characters of antiquity, who lived about 377 B.C.

LONDON:
JOHN WILLIAM PARKER, WEST STRAND.
Published in Weekly Numbers, Price One Penny, and in Monthly Parts, Price Sixpence.
Sold by all Booksellers and Newsvenders in the Kingdom.

THE

Saturday Magazine.

No. 584. AUGUST 7TH, 1841. Price One Penny.

STREET SCENE IN CAIRO.

SKETCHES OF CAIRO.

I.

THE desire of an intellectual people to become more intimately acquainted with the various nations of the world is one of the means which Providence has appointed of diffusing the blessings of civilization. Some men feel an ardent desire to visit distant lands,—to study the manners, laws, and customs of their inhabitants, —to examine the natural phenomena and productions with reference to science or to commerce,—and such men willingly expatriate themselves in order to gratify the ruling principle of their minds. But all men feel this principle in a greater or less degree, and the sketches of the artist and of the traveller are received with that respect and attention which show how deeply interested we are in the condition of our fellow-creatures in every part of the habitable globe. Such are the feelings of a people advancing in knowledge. How different is the view of this subject taken by a nation which for many centuries has occupied only a stationary position! the Arab looks with astonishment at the labours of the antiquary among the ancient monuments on the banks of the Nile, and is satisfied that he would not undergo such toil were he not seeking for hidden gold: even the more polished Egyptian regards the traveller either as a spy or as an emissary from his king, and it is difficult to convince him that this is not the case, so strange is the idea of a man's incurring great trouble and expense, for the purpose of acquiring the knowledge of foreign lands.

We feel, however, that the motives of the traveller are pure and disinterested,—his object being either to confer benefits on the people among whom he travels, or to contribute to the advancement of science among ourselves. At no distant period the details of the traveller were received with suspicion, even among ourselves,—his object was supposed to be to astonish and mislead,—and, referring everything to the standard of our own manners and customs, we received with contemptuous incredulity whatever differed greatly from it. This littleness of feeling has gradually given way under the exertions of first-rate men, who have visited and revisited distant climes, and have authenticated and enlarged the accounts already received. The artist and the traveller unite in conveying to us ideas so clear and precise of the different regions of the globe that we may well be content to remain at home, and yet become minutely acquainted with whatever region we desire to be informed of.

Egypt has ever been a land to which the traveller's curiosity has been directed; but while the antiquities, the manners, and customs of its ancient inhabitants have excited so much attention, it has been regretted that the modern tenants of this wonderful land should have been so imperfectly noticed. Through the exertions chiefly of two individuals this cause of regret no longer exists. Since Mr. Lane has published his *Account of the Manners and Customs of the Modern Egyptians*, and Mr. Robert Hay his *Illustrations of Cairo*, we are in possession of details so full, accurate, and minute that, although it would be too much to say that nothing more is left to be desired, yet it is probable that no other people have received a greater share of attention from the artist and the traveller. Mr. Lane resided among them for several years,—adopted their language, dress, manners and national peculiarities. Mr. Hay has furnished a noble volume* of lithographic prints, in the most exquisite style of art, from drawings made on the spot, accompanied with letter-press descriptions; and from these two sources, as also from the small but accurate work of Mr. Kinnear, who visited Egypt in 1839, we propose to furnish a few sketches of Cairo, first offering our best thanks to Mr. Hay for the kind liberality with which he has allowed us to copy his drawings.

GRAND CAIRO, the modern Egyptian metropolis, now called MUSR, was founded by Jawhar, a Moggrebin general, in the middle of the tenth century. He gave his new city the name of AL-KAHIRA, or EL-CKAHIREH, (that is, The Victorious,) whence Europeans have formed the name of Cairo. It is situated at the entrance of the valley of Upper Egypt, midway between the Nile and the eastern mountain-range of Moockuttum. Between it and the river is a tract of land, mostly cultivated, which in the northern parts (where the port of Boolack is situated) is more than a mile wide, and at the southern part less than half a mile. The city occupies a space equal to about three square miles, and is divided into the new and old cities. The old city is on the eastern bank of the Nile, and now almost uninhabited. The new city, which is properly Cairo, is seated in a sandy plain, about two miles and a half from the old city, and on the same side of the river. It is extended along the mountain, near a point of which, at an angle of the town, a castle is built, the city having been removed hither, it is supposed, in order to be under its protection. The city is surrounded by a wall, and the gates are shut at night.

The streets of Cairo are in general narrow and intricate, especially in the Jews' quarter, where some of the passages barely admit of two persons passing each other. The windows, with curiously carved wooden lattices, project so much on either side as nearly to meet over-head, and exclude much of the light, and, although this produces a useful and agreeable shade from the sun, it gives a sombre and dismal appearance to those streets which contain only dwelling-houses. In these streets very few passengers are seen, but in the bazaars and great thoroughfares there is a continual stream of Turks, Copts, Jews, Dervishes, and Bedaweens from the Desert, in their picturesque and graceful costumes.

A stranger who merely passed through the streets would regard Cairo as a very close and crowded city, but that it is not so is evident to a person who overlooks the town from the top of a lofty house, or from the minaret of a mosque, from whence may be observed within the walls many vacant places, some of which, during the season of inundation, are lakes. The gardens, burial-grounds, the courts of houses, and the mosques also occupy a considerable area. The great thoroughfares have generally a row of shops along each side. Above the shops are apartments, which do not communicate with them, and which are seldom occupied by the persons who rent the shops. To the right and left of the great thoroughfares are by-streets and quarters. Most of the by-streets have a large wooden gate at each end, closed at night, and kept by a porter within, who opens to any persons requiring to be admitted. The quarters mostly consist of several narrow lanes, having but one general entrance, with a gate, which is also closed at night, but several have a by-street passing through them.

In a country where neither births nor deaths are registered, it is difficult to ascertain with any precision the amount of population. A few years ago a calculation was made founded on the number of houses in Egypt, and the supposition that the inhabitants of each house in the metropolis amount to eight persons, and in the provinces to four. Mr. Lane thinks this computation approximates very nearly to the truth; and, according to it, Cairo contained previous to the plague of 1835 about 240,000 inhabitants. That calamity removed not less than one-third of the amount; but the deficiency was rapidly supplied from the villages. Of the inhabitants of the metropolis, about 190,000 are Egyptian Mooslims; about 10,000 are Copts, or Christian Egyptians;

* *Illustrations of Cairo, by* ROBERT HAY, Esq., of Linplum. *Drawn on stone by* J. C. BOURNE, *under the superintendence of* OWEN B. CARTER, Architect. This work is appropriately dedicated to Edward William Lane, Esq., "as a tribute of respect for the zeal and fidelity he has evinced in his literary pursuits connected with that country".

between 3000 and 4000 are Jews; and the remainder are strangers from various parts of the world.

We will speak more particularly of the Mooslims in a future article. The Copts are most probably the descendants of the ancient Egyptians, and differ from the Mooslims in religion; a difference sufficient in a land of religious intoleration to sever every other tie between them. It is difficult for a stranger to perceive any difference between the Coptish countenance and that of the Mooslim, beyond a certain downcast and sullen expression of countenance which generally marks the former. The Copt is distinguished by a black or dark blue turban, or one of a grave drab colour; and the Mooslims themselves often fail to recognize a Copt when they see him in a white turban. The Coptish patriarch, although styled patriarch of Alexandria, has his residence in Cairo, and is said to be very wealthy. He is chosen by lot from among the monks of the convent of St. Anthony. With the exception of a few who adhere to the Greek Church, they are of the sect called Jacobites or Eutychians, from Jacobus Baradæus, the propagator of the Eutychian doctrines.

One of the most remarkable traits in the character of the Copts is their bigotry. They bear a bitter hatred to all other Christians; even exceeding that with which the Mooslims regard the unbelievers in el-Islam. Yet they are considered, by the Mooslims, as much more inclined than any other Christian sect to the Mohammedan faith; and this opinion has not been formed without reason; for vast numbers of them have, from time to time, and not always in consequence of persecution, become proselytes to this religion. They are, generally speaking, of a sullen temper, extremely avaricious, and abominable dissemblers; cringing or domineering according to circumstances.

The Copts are not now despised and degraded by the government as they were a few years ago. Some of them have even been raised to the rank of beys. Before the accession of Mohhammad Alee, neither the Copts nor other Eastern Christians, nor Jews, were generally allowed to ride horses in Egypt; but this restriction has, of late years, been withdrawn. A short time since, the Mooslims of Damascus, who are notorious for their bigotry and intolerance, complained to the conqueror, Ibraheem Basha, of the Christians in their city being allowed to ride horses; urging, that the Mooslims no longer had the privilege of distinguishing themselves from the infidels. The Basha replied, "Let the Mooslims still be exalted above the Christians, if they wish it: let them ride dromedaries in the streets: depend upon it the Christians will not follow their example." The Copts enjoy an immunity for which they are much envied by most of the Mooslims: they are not liable to be taken for military service; as no Mohammedan prince would *honour* a Christian by employing him to fight against a Mooslim enemy.

The Coptic is now a dead language, and is only preserved in the religious books; the Arabic being spoken by the Copts as by the Mooslims, and taught in their schools.

The Jews inhabit the worst quarter of Cairo, a labyrinth of dark narrow lanes, in which it is hardly possible for two persons to pass. In their dress and persons they are generally slovenly and dirty. Many of them have sore eyes and a bloated complexion, occasioned, it is said, by the grossness of their food, in which they use great quantities of oil of sesame. They lead a very quiet life: indeed, they find few but persons of their own sect who will associate with them; for they are held in the utmost contempt and abhorrence by the Mooslims in general, and are said to bear a more inveterate hatred than any other people to the Mooslims and the Mohammedan religion. The more wealthy Jews dress handsomely at home; but put on plain or even shabby clothes before they go out: and, although their houses have a mean and dirty appearance from the outside, many of them contain handsome and well furnished rooms. The condition of the lower orders is very wretched; many of them having no other means of support than the alms of their superiors of the same sect.

The protection afforded by Mohhammad Alee to the Copts and Jews, is one great cause of the unfavourable feeling with which the rigid Mooslims regard the present government. The Christian reader will be delighted to hear that a Protestant mission is established in Cairo, and that the service of the Church of England is performed publicly every Sunday. The boys from the missionary school attend the public service in the chapel; and, it is said, that several of them are children of Mooslim parents, who are induced to send them to the school that they may acquire the English language, which is becoming an important accomplishment. "Indeed, there can be little doubt," says Mr. Kinnear, "that the toleration of the pacha's government has had a considerable effect in relaxing the bigotry of the mass of the population, and is undermining the foundations of Mohhammadinism."

In our frontispiece is represented one of the sebeels, or public reservoirs for the gratuitous supply of water, which the burning climate of Egypt has rendered necessary, and the charity and munificence of the wealthy have supplied. There are about three hundred in the city, and these are annually filled at the time of the inundation.

The Emeer 'Abd er-Rahmán Kyáhhya, a person of great wealth and power, who died in 1199, A.H.* (1766, A.D.), erected this and several other sebeels and charitable buildings. It exhibits a fantastic combination of Turkish and Arabian tastes, but is more unassuming and chaste than many of the sebeels built within the last seventy years; and the window through which the thirsty passenger receives his draught, is ornamented with a handsome bronze grating. Upon the upper part of the building is an open kuttab or school, which generally accompanies the sebeels, and it is situated at the point where two streets branch off.

In the foreground, seated in the public street, before the shop of an 'Attar or druggist, upon the floor of which is seen a nargeeleh for smoking, is represented a servant in the act of pounding some substance in a wooden mortar. A female of the lower order is advancing, veiled by the dark boorko; and another, a mendicant, is asking alms with her face uncovered,—a common circumstance amongst that class.

Beyn el-Kasreyn, that is, the Street between the two Palaces, was, a few years ago, an interesting spot for the antiquarian, from the fact of some remains existing of those buildings.

* The Mohammedans reckon from the "Hegira" or *Flight* of their Prophet.

Man, indeed, may be called a bee, in a figurative style. In search of sweets, he roams in various regions, and ransacks every inviting flower. Whatever displays a beautiful appearance, solicits his notice, and conciliates his favour, if not his affection. He is often deceived by the vivid colour and attractive form, which, instead of supplying honey, produce the rankest poison; but he perseveres in his researches, and if he is often disappointed, he is also often successful. The misfortune is, that when he has found honey, he enters upon the feast with an appetite so voracious, that he usually destroys his own delight by excess and satiety. —Knox.

Among all the graces that adorn a Christian soul, like so many jewels of various colours and lustres, against the day of her espousals to the Lamb of God, there is not one more brilliant than patience.—Bishop Horne.

In the least,
As well as in the greatest of his works,
Is ever manifest a present God:
As well in swarms of glittering insects, seen
Quick to and fro, within a foot of air,
Dancing a merry hour, then seen no more,
As in the systems of resplendent worlds,
Through time revolving in unbounded space.

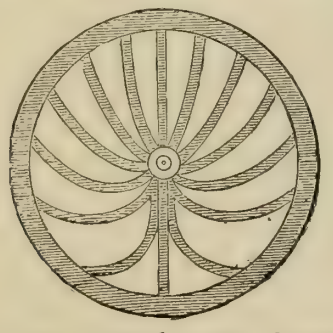
Carlos Wilcox.

OPTICAL ILLUSIONS. IV.

WE resume our notice of some curious optical phenomena, in which objects appear to the eye under circumstances singularly deceptive. We gave several instances of this kind in the former papers, and shall now add to the number.

Dr. Roget, in a paper communicated to the Royal Society, a few years ago, described a curious optical deception which takes place when a carriage-wheel, rolling along the ground, is viewed through the intervals of a series of vertical bars, such as those of a palisade, or of a Venetian window-blind. Under such circumstances, the spokes of the wheel, instead of appearing straight, as they would naturally do if no bars intervened, seem to have a considerable degree of curvature. The distinctness of this appearance is influenced by several circumstances; but when everything concurs to favour it, Dr. Roget states the illusion as being irresistible, and, from the difficulty of detecting its real cause, exceedingly striking.

The degree of curvature in each spoke varies, according to the situation it occupies for the moment with respect to a perpendicular line. The two spokes which arrive at a vertical position, above and below the axle, are seen of their natural shape, that is, without any curvature. Those on each side of the upper one appear slightly curved; those more remote, still more so; and the curvature of the spokes increases as the eye follows them *downwards* on each side, till we arrive at the lowest spoke, which, like the first, again appears straight. The most remarkable circumstance relating to this visual deception is, that the convexity of these curved images of the spokes is always turned downwards, on both sides of the wheel; and that this direction of their curvature is precisely the same whether the wheel be moving to the right or to the left of the spectator. The annexed cut will illustrate the appearance here alluded to.



Dr. Roget then instituted a series of experiments, for the purpose of arriving at results which might furnish a probable cause for the phenomenon; and he places his results under six different heads.

1. A certain degree of the velocity in the wheel is necessary to produce the deception above described. If this velocity be gradually communicated, the appearance of curvature is first perceptible in the spokes which have a horizontal position; and as soon as this is observed, a small increase given to the velocity of the wheel, produces *suddenly* the appearance of curvature in all the lateral spokes. The degree of curvature remains precisely as at first, whatever greater velocity be given to the wheel, provided it be not so great as to prevent the eye from following the spokes distinctly as they revolve; for it is evident that the rapidity of revolution may be such as to render the spokes invisible. It is also to be noticed that, however rapidly the wheel revolves, each individual spoke appears, during the moment it is viewed, to be at rest.

2. The number of spokes in the wheel makes no difference in the degree of curvature they exhibit.

3. The appearance of curvature is more perfectly seen when the intervals between the bars, through which the wheel is viewed, are narrow; provided they are sufficiently wide to allow of the distinct view of all the parts of the wheel in succession, as it passes along. For the same reason the phenomenon is seen to the greatest advantage when the bars are of a dark colour, or shaded, and when a strong light is thrown upon the wheel. The deception is, in like manner, aided by every circumstance which tends to abstract the attention from the bars, and to fix it upon the wheel.

4. If the numbers of bars be increased in the same given space, no other difference will result than a greater multiplication of the curved images of the spokes; but if a certain relation be preserved between the angles subtended at the eye by the whole intervals of the bars, and of the extremities of the spokes, this multiplication of images may be corrected. The distance of the wheel from the bars is of no consequence, unless the latter are very near the eye, as in that case the apertures between them may allow too large a portion of the wheel to be seen at once.

5. If the bars, instead of being vertical, are inclined to the horizon, the same general appearances result; but with this difference, that the spokes occupying positions parallel to the bars, are those which have no apparent curvature; while the curvatures of the other spokes bear the same relation to these straight spokes, and to each other, that they did in the former case. When the inclination of the bars is considerable, the images become more crowded, and the distinctness of the appearance is thereby diminished. The deception totally ceases when the wheel is viewed through bars that are parallel to the line of its motion.

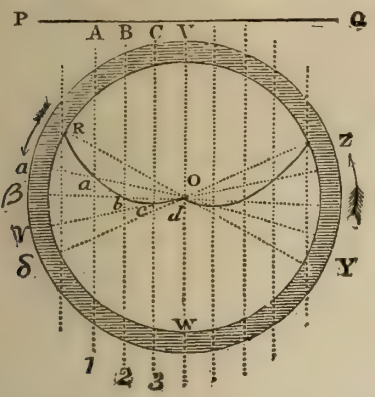
6. It is essential to the production of this effect that a combination should take place of a progressive with a rotatory motion. Thus, it will not take place if, when the bars are stationary, the wheel simply revolves on its axis, without at the same time advancing; nor when it simply moves horizontally, without revolving. On the other hand, if a progressive motion be given to the bars, while the wheel revolves round a fixed axis, the spokes immediately assume a curved appearance. The same effect will also result if the revolving wheel be viewed through fixed bars by a spectator, who is himself moving either to the right or left; because such a movement on the part of the spectator produces in his field of vision an alteration in the relative situation of the bars and wheel.

Having, in the true spirit of an experimentalist, thus investigated the consequences that would follow certain changes in the arrangement of the moving object, with a view to determine the relative importance of each, Dr. Roget proceeds to explain the principle on which the phenomenon rests. In his mode of so doing, we see the advantage of thus searching the experiment through various forms and stages; for a writer, in a scientific journal three or four years before, while describing a similar phenomenon, stated that the curvature of the spokes is produced just the same, whether a wheel be running along a plane as it revolves, as in the case of a carriage driven through the street, and viewed through the ordinary iron railing, or whether, as in a fly-wheel seen through a similar railing, it merely revolves in its own axis. Dr. Roget, however, shows both from theory and experiment, that there must be a combination of a progressive with a rotatory motion. It matters not, for the production of the phenomenon, whether the wheel or the system of bars progress, provided one or other does so.

Dr. Roget clearly shows, that the true principle on which this apparent curvature of the spokes depends, is the same as that to which is referable the illusion that occurs when a bright object is wheeled rapidly round in a circle, giving rise to the appearance of a line of light throughout the whole circumference; namely, that an impression made by a pencil of rays on the retina, if sufficiently

vivid, will remain for a certain time after the cause has ceased. To illustrate the production of the curves by a diagrain would involve considerable intricacy of detail; but Dr. Roget justly observes, that the principle may be well shown, and with comparative simplicity, by supposing that the wheel has only one spoke or radius instead of several, that it revolves in a stationary axis without progressing, and that one single aperture, instead of a system of bars, progresses from one side to the other.

In the annexed cut, the wheel, provided with one spoke



or radius O R, in revolving is the direction of the arrows, and is supposed to be seen through a single narrow aperture or crevice, moving horizontally in a given direction P Q. To simplify the case further, we will suppose that the progressive motion of the aperture is just equal to the rotatory motion of the circumference of the wheel. Such being the circumstances of the experiment, it will not be difficult to understand, that if, at the time of the transit of the aperture, the radius should happen to occupy either of the vertical positions V O or O W, the whole of it would be seen at once through the aperture, in its natural position. But if it should happen to be in an oblique position R O, terminating at any point of the circumference, at the moment the aperture has, in its progress horizontally, also arrived at the same point R, the extremity of the radius will now first come into view, while all the remaining part of it is hidden. By continuing to trace the parts of the radius that are successively seen by the combined motions of the aperture and of the radius, we shall find that they occupy a curve R *a b c d*, generated by the continued intersection of these two lines. Thus, when the aperture has moved to A, the radius will be in the position O *a;* when the former is at B, the latter will be O *β*, and so on.

If, pursuing the same mode of inquiry, we suppose, that when the aperture is just passing the centre, the radius is found in a certain position on the other side O Y, and rising towards the summit, then, by tracing as before the intersections of these lines in their progress, we shall obtain a curve precisely similar to the former. Its position will be reversed; but its convexity will still be downwards. If the impressions made by these limited portions of the spoke follow one another with sufficient rapidity, they will, as in the case of the luminous circle already alluded to, leave in the eye the trace of a continuous curve line; and the spoke will appear to be curved, instead of straight.

By applying a similar train of reasoning to the phenomenon which gave rise to these investigations, Dr. Roget satisfactorily shows that the cause may be arrived at. Since the curved appearance of the lines results from the combination of a rotatory with a progressive motion of the spokes, in relation to the apertures through which they are viewed, it seems pretty evident that the same phenomenon must be produced if the bars be at rest, and both kinds of motion be united in the wheel itself; for, whether the bars move horizontally with respect to the wheel, or the wheel with respect to the bars, the relative motion between them, and its effects to the eye placed behind the aperture, must be the same. The attention of the spectator should in both cases be wholly directed to the wheel, so that the motions in question should be referred altogether to it.

Dr. Roget investigates the mathematical nature of the curves, into which the spokes are apparently thrown; but such an investigation is unsuited for our pages.

LABYRINTHS.

This curious class of buildings seems to have been used in ancient times for the purposes of imprisonment and devotion. A labyrinth is an architectural, or other kind of construction, whose numerous passages and perplexing windings render the escape from it difficult and almost impossible. It was composed of, or filled with chambers and galleries, one running into the other; so that, without a clue or guide, a stranger could not pass through it. These edifices were not built for the purpose of making people lose their way: this was merely an accidental peculiarity, on account of which every confused mass of things, difficult to be disentangled, has been called a *labyrinth* or *maze*.

The construction of labyrinths in modern times has been chiefly for the purposes of amusement. With this view they are often formed with quickset hedges, as in the Sidney Gardens at Bath. The ancients had four labyrinths which were very celebrated:—one in Egypt, another in Crete, a third in Lemnos, and a fourth in Italy: these, therefore, we shall do well to notice in order.

The Egyptian labyrinth, the most celebrated of all, was situated in Central Egypt, above Lake Mœris, not far from Crocodilopolis, in the country now called *Fayoom*. It was built about 650 years B.C. by twelve kings, who reigned at one time in Egypt; and it was probably intended for the place of their burial, and to commemorate the actions of their reign. The beauty and the art of the building were, according to Herodotus who saw it, almost beyond belief,—superior to the pyramids. The edifice contained twelve courts enclosed with walls, with as many doors opposite; six opening to the north, and six to the south, contiguous to one another; the same exterior wall extending round them. There were 3000 chambers; half in the upper part of the building above ground, and the other half below ground. The chambers above were seen by Herodotus, and astonished him beyond conception; but he was not permitted to see those below, where were buried the holy crocodiles, and the monarchs whose munificence had raised the edifice. The roofs and walls were encrusted with marble, and adorned with sculptured figures. The courts or halls were surrounded with stately and polished pillars of white stone; and according to some authors, the opening of the doors was artfully accompanied with a terrible noise, like peals of thunder.

The arrangement of the chambers of the Egyptian labyrinth seems to have been symbolic of the zodiac and the solar system. They excelled, in splendour and art, all human works. At present, only 150 rooms are reported to be accessible: the others are dark and choked with rubbish. The ancient labyrinth is supposed to be identical with the ruins of Casr Caroun.

In the midst of these ruins a large edifice rises up, of which there are several halls remaining, filled with trunks of columns. A portico, half demolished, encompasses it. Staircases may be distinguished, by which they mounted to different apartments; and others, by which they descended into subterraneous passages. But what particularly attracts attention, is the view of several low, narrow, and very long cells, which seem to have had no other destination, than to contain the bodies of the sacred crocodiles, brought hither from Crocodilo-

polis, or the City of Crocodiles, a town of Egypt near the Nile, above Memphis. The crocodiles were held there in the greatest veneration; and they were so tame that they came to feed from the hands of their feeders. This city was afterwards called Arsinöe. The crocodiles were embalmed before being consigned to the subterraneous cells of the labyrinth.

These ruins, placed on the western side of the Nile, at a league's distance from Birket Caroun, formerly Lake Mœris, can only correspond with the labyrinth; for ancient authors assigned it this position, and point out no town on that side. Strabo, Ptolemy, and Herodotus, all agree in placing the labyrinth beyond the city of Arsinöe, on the western side, and on the banks of the Lake Mœris. This is exactly the situation where we meet with the ruins described by Savary. Modern travellers are all of them still astonished at these noble and magnificent ruins.

The labyrinth of Crete was the most celebrated and classic of these mazes. It belonged to the ancient town of Gnossus, which was situated on the north of the island of Crete, now called *Candia*, and west of the present city of Spinalonga. This building was constructed by Dædalus, an Athenian, for Minos, who was King of Crete, about fourteen centuries before the Christian era. It was built upon exactly the same plan as the Egyptian labyrinth; but it was by no means so large. We are told that, by the unanimous testimony of the Cretans, this labyrinth, with its many and varied spiral-formed windings, was designed as a prison, for the secure and close confinement of malefactors; and likewise, that Dædalus, its architect, having incurred the displeasure of Minos, was almost its first inmate.

Now there still exists a subterraneous maze in the island of Candia, the ancient Crete, near the ruins of Gortyna, and somewhat to the south of Gnossus, whereabouts is now the town of Spinalonga. At about an hour's march from the plain of Gortyna is the mouth of this labyrinth or quarry, which is about seven or eight paces broad at its entrance, but so low that a man cannot pass it without stooping: on advancing a little way the passage widens, though even here it is often obstructed with large stones lying here and there, and also by the surface being extremely rough and uneven. The roof is flat, for it is cut in the rock above, and formed of beds of stone, lying horizontally one upon another; proceeding onwards through a sloping cavern, a great number of turnings and windings is met with, so irregular and intricate, that should a traveller, without a ball of thread or some other contrivance, strike into one of them out of the main path or alley, he would be in great danger of being bewildered and lost;—for few persons have been bold enough to explore all its mazes, so that visitors in general keep along the principal path, and seldom deviate either to the right or to the left; and, even in this case, to guard against all possible accidents, they take such precautions as scattering straw on the ground, or sticking up pieces of paper at every turning; for the eternal gloom and obscurity can scarcely be penetrated by the torches, with which every traveller is furnished, and whose faint light only seems to add to the awful gloom and perplexity.

On the left there are several vaults without any outlet, and the proper and direct road lies on the right of the entrance, where, after ascending by a narrow path, the traveller is compelled to creep upon his hands and knees for about a hundred paces, on account of the lowness of the roof. Having reached the end of this dwarfish defile, the ceiling suddenly rises to a considerable elevation, and the visitor finds himself upon his feet again. The vaulted galleries through which he now proceeds are seldom less than seven feet in height, and from six to ten in width, having a countless variety of avenues, opening on each side, and crossing each other in different directions. These roads are all cut with a chisel in the rock, the layers of which are disposed in a horizontal plane, and are of a grayish colour. In some places enormous masses of stone, half torn from the roof, seem ready to fall upon the head of the adventurous passenger, while he, in danger of being crushed, must stoop low, in order to pass beneath them. Earthquakes, from which this island has often suffered, have doubtless occasioned these fractures in the rock.

The traveller has often, after advancing a considerable distance in one division, to retrace his steps, on account of no opening being in that direction. Sometimes, after long windings, he is surprised to find himself at the very place from which he had last set out. To enumerate or describe all the complication or intricacy of the circuitous avenues cut in this stupendous excavation would be almost beyond the power of language. Seeing them is the only method of obtaining an accurate knowledge, and of thoroughly appreciating these gigantic wonders. Some of these galleries form curves, leading imperceptibly to a wide space, the roof of which is supported by large pillars, and here three or four roads meet, running in opposite directions, while others extend in a spiral form for a considerable way, and in several ramifications are carried to a great length, and being then terminated by the rock, put a stop to the traveller's progress.

The distance from the mouth to the end of the cavern is more than a mile: here the walk divides itself into two or three branches, and terminates in two large halls, from twenty to thirty feet square. In passing along one of this infinite number of winding paths, a very fine grotto is discovered, the roof of which is elevated in the form of a dome, all of which appears formed by the hand of nature. It however possesses no stalactites, nor are any such crystal curiosities met with in any part of this underground wilderness, for the cavern is completely dry, and no water is seen trickling through the rock, as is usual in such places; but, as there is no vent or admission for fresh air, the consequence is that a most disagreeable smell or effluvium is constantly floating in the atmosphere of these vaulted tomb-like paths, and the thousands of bats,—the only occupants of these dark recesses,—do not conduce a little to the foul and disgusting scent with which the noses of travellers are assailed in their progress. There is a most peculiar property connected with the stone of this quarry, for it is a surprising, but yet authenticated fact, that any letters or figures inscribed or engraved on the plain surface of the rock will, in the course of time, swell above the face of the stone, and be no longer hollow, but projecting or embossed characters, and the matter produced by this filling up is always found to be whiter than the rest of the rock.

In wandering through such an horrific and sombre place as this, the imagination conjures up a host of frightful or fantastic images;—it fancies steep precipices and yawning chasms about to ensnare the feet of the curious observer,—hideous monsters ready to spring upon him at every turn,—in a word, a thousand chimeras, which have no existence except in romances and fables; and when a traveller thinks of himself as being there alone, without either thread or torch, he feels a thrilling horror come over him, a torpor seizes his mind, and his faculties seem to forsake him: his very soul is filled with terror. Every thing around convinces him, that, if placed in such an awful situation, all hope would be extinguished in his bosom, and nothing would be left but to meet death with fortitude and resignation.

Some writers imagine that the maze at Gortyna was nothing but a quarry, out of which were dug the materials for building the ancient towns of Gnossus and Gortyna; but others decidedly oppose this opinion, stating that the stone is too soft for the purposes of architecture; that the way from the cavern is almost impassable, especially for vehicles heavily laden; and that, had the way

been good, the entrance to the cavern would have been larger; and that, as it is, all stones brought from the interior must have been first broken into small pieces, which would have greatly and unnecessarily increased both the labour and the expense. We come, therefore, to the most probable conjecture,—which is, that it was, at first, an enormous cave; that nature had drawn the plan and formed the outlines; that Dædalus enlarged several of the passages, and cut out many new ones; and that various other persons have had the curiosity to extend it, by widening the avenues and taking down large strata of stone to heighten the roof.

Lemnos, now called *Stalimene*, is situated in the northern part of the Archipelago, formerly called the *Ægean Sea*. The labyrinth constructed on this island is said to have surpassed the others in splendour and magnificence. It was supported by forty columns of uncommon height and thickness, and equally admirable for their beauty and grandeur.

The labyrinth at Clusium in Tuscany was erected by Porsenna, the king of that place, about B.C. 530. It was probably intended to be his own sepulchre. It was a square building of stone, fifty feet in height, and thirty on each side. At each corner stood a pyramid, and also one in the centre, each one hundred and fifty feet high, and at the base seventy-five feet wide. We have no further particulars to offer our readers respecting the Lemnian and Clusian labyrinths.

BLAME not the fates, nor call their lot unkind,
Whose wants are many, and whose joys confined;
For Heaven's best gifts are equal showered around,
As vernal dews that bathe the thirsty ground.
On the unjust and just the rain doth fall,
The sun's bright glories shine alike on all;
The ambient air alike its current blows
On rich and poor, on brothers and on foes;
And love—the last best gift of bounteous Heaven—
Alike to all the tribes of Earth is given.

The late LADY NORTHAMPTON.

GOOD manners consist in a constant maintenance of self-respect, accompanied by attention and deference to others; in correct language, gentle tones of voice, ease, and quietness in movements and action. They repress no gaiety or animation which keeps free of offence; they divest seriousness of an air of severity or pride. In conversation, good manners restrain the vehemence of personal or party feelings, and promote that versatility which enables people to converse readily with strangers, and take a passing interest in any subject that may be addressed to them.—*Woman's Rights and Duties.*

HE who best understands himself is least likely to be deceived by others: you judge of others by yourselves, and therefore measure them by an erroneous standard, whenever your autometry is false.—SOUTHEY.

BY reading we enjoy the dead, by conversation the living, and by contemplation ourselves.

SOLITUDE sometimes is best society.

FULLER says, that if God has no need of human learning, still less has He of human ignorance.

THE firm endurance of suffering by the martyrs of conscience, if it be rightly contemplated, is the most consolatory spectacle in the clouded life of man; far more ennobling and sublime than the outward victories of virtue, which must be partly won by weapons not her own, and are often the lot of her foulest foes. Magnanimity in enduring pain for the sake of conscience, is not indeed an unerring mark of rectitude, but it is of all destinies that which most exalts the sect or party whom it visits, and bestows on their story an undying command over the hearts of their fellow-men.—SIR JAMES MACKINTOSH.

BEET-ROOT SUGAR

III. THE INTRODUCTION OF THE MANUFACTURE INTO FRANCE.

IN the second paper on this subject we gave an outline of the methods in which Achard and Gottling produced sugar from beet-root, towards the latter end of the last century. We now proceed to consider the course taken by the French government in relation to this matter.

We alluded in the first article to the desire of Bonaparte that France should be quite independent of England in obtaining a supply of the necessaries of life. But there was another motive which turned the direction of the French people to this subject, viz., the enormously high price which cane-sugar had attained, and which was at one time six francs the kilogramme (about two shillings and three pence per pound). Attention was, in the first place, directed to the cultivation of the sugar-cane itself in Provence, but this utterly failed. Then fruits and stems of various kinds were tried, to ascertain whether sugar could be obtained therefrom, but these attempts likewise failed. M. Deyeux was then ordered to prepare a report to the Institute of the experiments made by the Prussian chemist, Achard, detailed in our last paper; and the report given in by Deyeux was very favourable to the cultivation of the beet for the sake of producing sugar. The experiments of Achard, however, being received with some degree of distrust, he immediately offered to repeat them before persons worthy of confidence, and to publish the results in a memoir. The opinion of scientific men became then more favourable to the project, and he established one or two manufactories for beet sugar. These attempts, probably from the inefficient scale in which new projects are almost necessarily conducted, failed in producing any striking results. The plan fell into disrepute for a time, and a new project was entered on, viz., that of producing sugar from raisins. The government sought to encourage this experiment, by offering rewards to those who should be most successful in them. By a decree of the 18th of June, 1810, a sum of one hundred thousand francs, and the cross of the Legion of Honour, were given to M. Proust, and another sum of forty thousand francs was awarded to M. Fouquet, for their exertions in this matter. But the success of these attempts was not such as to lead to permanent results, and they were abandoned.

The motives which had led to the institution of these experiments still continuing, Bonaparte resolved to resume, on a larger scale, the experiment with the beet-root. On the 15th of January, 1812, a decree appeared establishing five chemical schools, for the fabrication of sugar from beet-root; situated respectively at Paris, Wachenhem, Douai, Strasburg, and Castelnaudary. A hundred pupils were attached to these schools, each of whom, after three months' study, and a strict examination, was to receive a thousand francs. The Minister of the Interior was empowered to plant one hundred thousand *arpents* (nearly equivalent to English acres) of land in France with beet-root; and four years' exemption from taxes were promised to cultivators. Five large manufactories were to be established, for the preparation of sugar from the root; and their mode of arrangement was such that the production of about five million pounds of sugar per annum was calculated on. What the success of these measures might have been, we do not know, for the disastrous Russian campaign, which soon followed, had the effect of opening the ports of France to sugar produced by foreign countries. At that early stage, the beet-sugar production could not stand without government protection; and this protection being withdrawn, the whole machinery fell to the ground, and for ten years very little was done in the matter.

At length, in the year 1829, several manufactories

were established, but for the most part under unfavourable circumstances; for the speculators seldom united the knowledge and experience of the manufacturer with that of the agriculturist. The want of this union of talent operated so disastrously, that one half of the manufactories were abandoned by the year 1829. This latter year, however, formed a point of time from which this great experiment—for such it undoubtedly is—assumed a more favourable appearance. The slow mode of crystallization until then adopted, was abandoned for one more expeditious; and many improvements were from time to time brought to bear, either upon the cultivation of the root itself, or upon the preparation of sugar from the juice thence extracted. Notwithstanding a tax which was laid upon beet-root sugar, the spread of the manufacture was so rapid, that by the year 1838 there were five hundred and fifty establishments in France, which produced sixty million kilogrammes (about a hundred and thirty million pounds, of beet-root sugar.

In considering the relative advantages likely to result from the use of beet and from cane-sugar, Chaptal, after an experience of twelve years, came to these two conclusions:—that the juice extracted from the beet does not differ from that yielded by the sugar-cane, either in colour, taste, specific gravity, or crystallization; and that the cultivation of beet for the sake of obtaining sugar, may advantageously proceed concurrently with that of the sugar-cane, when the price of cane-sugar is as high as one franc twenty centimes the demi-kilogramme, that is, that when the price of cane-sugar obtained from the French colonies is as high as thirteen-pence per pound, the beet-sugar may be prepared with a profit. These facts being stated and admitted, Chaptal proceeds to consider how far the culture of the beet may be favourable to France generally. He states that the culture of the beet does not prevent the growth of a single ear of corn, because the beet forms an intermediate crop, immediately after the gathering of which, corn may be sown. Moreover, the crop of corn grown in a soil previously planted with beet is said by him to be better than in any other soil; because the soil has been loosened by the beet-roots, and cleared by the weeding which the beet crop has undergone. A farther advantage is, that the preparation of the beet takes place principally in winter, and furnishes work to horses and farm-servants, who are often unemployed at that season. The food for cattle is also provided by the same means as the beet is produced; for the part of the plant which grows above ground, and which is not used in the sugar-preparation, constitutes one of the most valuable kinds of fodder. There is one remark by Chaptal which is of much importance in relation to the manner in which the manufacture should be carried on. He says:—"To insure success for beet-root sugar establishments, it is necessary that they be united to rural cultivation. These kind of manufactures are misplaced in towns. The roots are more expensive when purchased from others, than when the manufacturer grows them himself; the remaining parts of the plant find scarcely any market in a town; hand-labour and fuel are dearer; and farm-servants are less easily procured." Acting on these principles, Chaptal himself, as we shall show in our concluding article, combined in his own person the agriculturist and the manufacturer.

From numerous experiments made upon the beet-root of Bondues, a village situated near Lille, Pelouze found that a soil in which tobacco had been grown the preceding year yielded roots of a considerable size, and of a saccharine richness, equal to that of roots of a smaller size, and superior to similar roots planted in a soil not previously occupied with a tobacco crop. In two neighbouring fields, one of which had had a tobacco crop the preceding year, and the other had not, the produce of sugar from the former was fifty per cent. more than from the latter.

It thus appears, that the French chemists and agriculturists have succeeded in bringing the cultivation of the beet to a point of considerable importance. Indeed, at the present time, the quantity of beet-root sugar made in France very nearly equals that of the cane-sugar imported from her colonies. The relation which now exists, or ought to exist, between the two kinds of sugar, with respect to taxation, encouragement, &c., although occupying the attention of persons in that country, would have no interest for the English reader, since beet-root sugar is not cultivated in the British dominions.

We have one more paper to present on this subject, in order to work out the plan proposed. We gave, in the second article, a detail of the processes adopted forty or fifty years ago, in Germany; but we wish to give an idea of the methods actually adopted in France. Chaptal was a chemist, an agriculturist, and a manufacturer, and has given a full account of the modes which he adopted for cultivating the plants, gathering the roots, expressing the saccharine juice therefrom, and obtained crystalline sugar from the juice. A brief account of his process will occupy our concluding paper.

To preserve health is a moral and religious duty: for health is the basis of all social virtues; we can be useful no longer than while we are well.—Dr. Johnson.

Medicine is God's second cause of health.

In exalting the faculties of the soul, we annihilate, in a great degree, the delusion of the senses.—Aime Martin.

King Louis the Twelfth of France was naturally inclined to economy: this was once made a topic of ridicule in his presence, to which he replied, "I had rather see my courtiers laugh at my avarice, than my people weep at my extravagance."

Everything is either lost or won in the heart; it is there that all battles take place: all moral contests are carried on independently of external objects, and previous to the visible scuffles of divided interests.

"O my son," says an Arabic proverb, "take care that your mouth breaks not your neck."

Death is at all times solemn, but never so much so as at sea. A man dies on shore: his body remains with his friends, and "the mourners go about the streets;" but when a man falls overboard at sea and is lost, there is suddenness in the event, and a difficulty in realizing it, which gives to it an air of awful mystery. A man dies on shore, you follow his body to the grave; a stone marks the spot. You are often prepared for the event. There is always something which helps you to realize it when it happens, and to recall it when it has passed. A man is shot down by your side in battle, and the mangled body remains an *object*, and a *real evidence;* but at sea, the man is near you, at your side you hear his voice, and in an instant he is gone, and nothing but a *vacancy* shows his loss. Then, too, at sea—to use a homely but expressive phrase—you *miss* a man so much. A dozen men are shut up together in a bark, upon the wide, wide sea, and for months and months see no forms and hear no voices but their own, and one is taken suddenly from among them, and they miss him at every turn. It is like losing a limb. There are no new faces or new scenes to fill up the gap. There is always an empty berth in the forecastle, and one man wanting when the small night watch is mustered. There is one less to take the wheel, and one less to lay out with you upon the yard. You miss his form, and the sound of his voice, for habit has made them almost necessary to you, and each of your senses feels the loss.—*Two Years before the Mast.*

LONDON:

JOHN WILLIAM PARKER, WEST STRAND.

Published in Weekly Numbers, price One Penny, and in Monthly Parts, price Sixpence.

Sold by all Booksellers and Newsvenders in the Kingdom.

THE

Saturday Magazine.

Nº 585. AUGUST 14TH, 1841. {PRICE ONE PENNY.

WARWICK CASTLE.

Now Warwick claims the song, supremely fair
In this fair realm; conspicuous raised to view,
On the firm rock, a beauteous eminence
For health and pleasure formed. Full to the south
A stately range of high embattled walls
And lofty towers, and precipices vast,
Its grandeur, worth, and ancient pomp confess.

—

AMONG the number of castellated mansions (remarks Mr. Britton), which formerly abounded in England, very few have continued to be inhabited, and adapted to the domestic arrangements of modern times. Those of Windsor, Raby, Lumley, and Warwick, are therefore remarkable: for whilst they present the external features of feudal ages, and impress the spectator with sentiments of chivalry and romance, their apartments are at once spacious and elegant; their inmates are accomplished and polite; and the annexed gardens and pleasure-grounds are replete with every charm to fascinate the eye and please the senses. Formerly these places were intended to protect a rude and austere race of mail-clad knights and their vassal dependants; now they are occupied by men of enlarged and enlightened minds, and by women of suavity, benevolence, and beauty. Instead of the art of war, and human butchery, as formerly studied within their walls, we now find the fine arts and literature cultivated and understood. The contrast is powerful and cheering: for now, instead of viewing the frowning battlements and dismal cells with dread and terror, we contemplate them as objects of grandeur and picturesque beauty.

The present Castle of Warwick affords specimens of the workmanship of different and distant ages. The oldest parts present some bold and almost impregnable specimens of Norman architecture, whilst a few parts display the tasteless additions of modern times. The foundation is laid on a vast bed of rock, which rises precipitously from the northern bank of the river Avon. Impending over this classical stream is a long line of buildings, consisting of towers, state apartments, and subterranean offices. At the south-eastern extremity is that majestic edifice called Cæsar's tower, and, at the opposite end, is a bold projecting turret. This front extends above 400 feet, and presents, in its elevation, a grand, picturesque, and stupendous mass. From the level of the water to the basement floor, the rock has been cut away in an almost perpendicular face, and is nearly of equal height with the whole superincumbent building. This mass of rock is diversified by hanging shrubs, fissures, and varied stains and mosses. Projecting from it, near the eastern end, is a flour mill, from which a ledge of rocks extends across the river, and occasions a constant water-fall, of nearly the whole stream. The southern front, with the return of the western side, consists of a gallery, a tower gateway to the inner court, and a flanking wall connecting this gateway with the keep-tower, which occupies the summit of a high conical

mount. The embattled and terraced wall again returns from this keep round the northern side of the inner court; and about midway between the eastern and western ends, it forms a semicircular sweep, and is flanked and guarded by two bastion towers. The walls and small apertures of these exhibit great strength. From these the wall continues to the north-east angle, where is a lofty polygonal building called *Guy's Tower*, and here the wall returns at right angles to the grand entrance tower gateway. Hence it passes to the great tower at the south-eastern angle. The whole of the walls are surmounted by embrasures, loop-holes for arrows, a parapet, and a terrace walk. The latter was conducted through the towers up and down flights of steps, and to various merlons and machicolations. Near the centre of the eastern wall is the principal entrance-gateway. Mr. Britton says that this is a grand and very curious feature of castellated architecture, and is perhaps the most perfect specimen remaining in the country. A bridge, formerly a draw-bridge, is thrown across a wide fosse; on the inner bank of which is the chief portal, flanked by two octagonal towers with small loop-holes in each face, holes over the arch, and a portcullis within. Further under the archway was a second barrier formed by strong folding doors or gates. About forty feet further was a second portcullis, and still within that was another pair of doors or gates, filling up a large arch. This passage, nearly ninety feet long, opens to the inner ballium or court by a lofty arch, flanked by octagonal towers, which rise to a considerable height, and contain several stories or floors, formerly used for the residence of porters and domestics. Other rooms, staircases, and galleries were distributed in various parts about this entrance. Near the doors and portcullisses were apertures in the vaulted roof for annoying assailants, and under the arched way were several niches for wardens, and door-ways to stairs, to rooms, and to the walls. After passing through this long, gloomy, and strongly-guarded archway, we come to the inner ballium, surrounded by the principal dwelling apartments to the south; the lofty keep-tower and mount, with a tower gateway to the west; a high embattled wall with bastion towers to the north; and the Gateway tower, with Guy's tower, Cæsar's tower, and a lofty connecting wall to the east.

The two towers just named are very imposing objects and interesting examples of architectural design. The date of the elevation of Cæsar's tower is unknown: the mode of construction is somewhat rude, and possesses many singularities. "Jutting from one side of this tower is an embattled turret of stone, where imagination may place the herald at arms, demanding, in a long past century, the name and purpose of those so hardy as to advance unbiddden." The other tower is named after the champion of the castle, the redoubted Guy*. This part of the structure is upwards of 100 ft. in height, and was built by Thomas Beauchamp, earl of Warwick, in 1394, at the cost of 395*l.* 5*s.* 2*d.*

The entrance is flanked by embattled walls, richly clothed with ivy; and the deep moat, now dry, is lined with various shrubs, and ornamented with trees of a vigorous and noble growth. The disused moat is crossed by a stone bridge, and the entrance is by double machicolated towers, through a series of passages once fraught with multiplied dangers for the intruder. In the great court, to which the visitor passes, the display is truly magnificent. The area is a soft green sward; but, spread around, are viewed the remains of fortifications raised in turbulent ages. The relics are perfect in outline, and no battlement exhibits the havoc of time; while the hand of taste has spread a softness over the whole productive of most grateful relief. We see with pleasure the ivy bestow pictorial mellowness on parapets and turrets, which must have been only rugged and formidable when manned with warriors in steel, and fresh in early masonry; but now the broad Gothic windows supplant the cheerless single light and fatal loop-hole.

The interior of this august fabric, (which is furnished in a chaste but magnificent style,) we need not describe. A few historical facts relating to the castle may, however, be found interesting.

There is no record concerning the precise era at which a fortified building was founded on this spot. The castle has been described by some writers as of British, and by others as of Roman, origin. The foundation seems to have taken place before the Norman Conquest; and it is probable that Ethelfleda, the daughter of King Alfred, first constructed a strong-hold in this place. The fortress was, for some time, the residence of the Vice-comites, or lieutenants of the Earls of Mercia; and Turkill, who was Vice-comes at the time of the Conquest, was directed by William the First to add considerably to the extent and strength of the fortifications. Soon afterwards the Norman monarch appointed Henry de Newburgh as Governor, and created him Earl of Warwick. At the latter end of King Stephen's reign it was occupied by that monarch's soldiers, for Gundred, countess of Warwick, turned these out to make room for Henry, duke of Normandy, afterwards crowned as King Henry the Second. In the nineteenth year of this reign the sheriff accounted for vi*l.* xiii*s.* iv*d.* for twenty quarters of bread-corn; xx*s.* for twenty quarters of malt; c*s.* for four beefs salted; xxx*s.* for ninety cheeses; and xx*s.* for salt, then laid up in the castle. The next year xxx*l.* x*s.* viii*d.* were paid to soldiers in garrison here; and vi*l.* xiii*s.* xi*d.* for repairs.

In the reign of Henry the Third the extraordinary strength of this building was alleged as a reason for prohibiting the widowed Countess of Warwick from marrying any person without the king's consent. In the furious contests which afflicted the latter years of Henry the Third, Warwick Castle, almost impregnable to open assault, was taken, in consequence of William Mauduit, the then earl, neglecting to keep due guard. The rebels were stationed at Kenilworth in great power. They surprised, and took possession of, Warwick Castle, took the earl and his countess prisoners, and demolished some of the walls. The damage thus done to the castle was not repaired till the reign of Edward the Third, when Thomas Beauchamp, earl of Warwick, "erected anew the outer wall of the castle, with divers towers." The castle was afterwards successively occupied and governed by John de Clinton, Thomas Holland, earl of Kent, George Plantagenet, duke of Clarence, and Earl of Warwick, who made some alterations in the buildings, and proposed to make more, but was attainted of high treason by his brother, King Edward the Fourth, who ordered him to be drowned in a butt of Malmsey wine.

The castle is described as being in a very ruinous condition in the second year of King James the First, when it was granted to Sir Fulke Grevile, who expended "upwards of 20,000*l.* in repairing and adorning the same for a family-seat." "He made it," says Dugdale, "not only a place of great strength but extraordinary delight, and the most princely seat within the midland parts of England." He was created Baron Brooke, and, according to his monumental inscription, was "servant to Queen Elizabeth, counsellor to King James, and friend to Sir Philip Sidney." He was murdered by his own servant at Brooke House, in Holborn, and was succeeded by Robert Lord Brooke, who took part with the parliament against Charles the First. Warwick Castle now became a garrison. It was besieged in August, 1642, by the Earl of Northampton, and defended by Sir Edward Peito, with a very small force. Soon after was fought the celebrated battle of Edge-hill. Lord Brooke was killed by a musket-shot at Lichfield, and his son Robert, in more peaceable times, "fitted up the state apartment at a considerable expense," and made

* In one of the rooms attached to Cæsar's Tower are still preserved the sword, shield, helmet, &c. ascribed to the legendary hero Guy

many other improvements. The subsequent noble possessors of the castle have from time to time so arranged and decorated the halls, that, while a proper allusion is made to the antique castellated outlines of the edifice, the purely domestic comforts of the homes of England are not forgotten.

BEET-ROOT SUGAR.

IV. The present mode of preparation in France.

Chaptal sows the beet seeds in the month of April or the beginning of May, and thus avoids on the one hand many inconveniences of cold and rain likely to result at an earlier period, and inconveniences of an opposite kind if left to the month of June. He recommends that every cultivator should prepare the seeds for himself, by using such as he had collected, in the previous September, from the beet plants, each of which will yield five or six ounces of seed. All arable lands are fitted for the growth of the beet; and Chaptal ploughs three times for the preparation of the beet-sowing, viz., twice during the winter, and once in the spring.

There are different modes of sowing the seeds. The first is, indiscriminately over the ground; a mode which takes much less time, at a season when all hands are busy; but in subsequently transplanting the young plants, they are very likely to be injured. Other methods are adopted by different persons; but the one which Chaptal prefers is, sowing in rows. When the ground is prepared, a range of depressions, about an inch in depth, are made by means of a rake whose teeth are eighteen inches apart; and women, who follow the rake, deposit seeds in the depressions, at a distance of about sixteen inches apart: each woman thus sows six or eight thousand seeds per day, and covers them over with earth by the hand.

As the beet is likely to be injured by the vicinage of other plants, and also by the earth being hard or not well drawn up around it, the young plants require careful attention. Weeding is necessary twice during the growth, not only for the removal of noxious plants, but also for the purpose of opening the ground to the reception of air and moisture. By the month of October the roots have acquired that perfection which fits them for further operations, and the plants are taken up before the frost arrives. In the southern and warmer parts of France, the root comes to maturity at an earlier period, and must be gathered early, else the saccharine principle undergoes changes which unfit it for the required purpose.

As each root is taken up, the leaves are cut off and left on the ground, where cattle and sheep feed on them; and it is found that the leaves which die and serve as manure to the soil bring it into a state peculiarly fitted for a corn crop. As the roots, when collected, are extremely sensitive to heat and cold, great care is required in their treatment. They are left on the field for a short time, to evaporate some of their moisture, and are then taken to a barn where they are laid in heaps, with layers of straw beneath, around, and above the heap. Some cultivators dig a trench in the open field, line it with straw, and fill it up with the beet-roots, which are then covered with thatch or straw. Shielded in this way from the weather, the roots remain until about to be used.

The first operation on the roots is to cleanse them from dirt and mould, and to cut off the rootlets and other useless parts. They are then ground to pulp by a machine, moved either by horses or by a water-mill. The machine consists of two cylinders, each about twenty-four inches in diameter, the surfaces of which are covered with teeth. The cylinders being made to rotate very rapidly, the roots are brought in contact with them, and speedily reduced to fine shreds or pulp. (The reader will recollect that, in Gottling's method, the roots were sliced and hung upon strings to dry). The pulp falls into a vessel lined with lead. This method of rasping is found much more effectual than expression, for the latter method yields but forty or fifty per cent. of juice whereas the former often yields as much as eighty.

As the pulp is ground, it is put into strong canvas bags, and placed under a powerful press to squeeze out the juice. The residue is stirred, and subjected to a second, or even third, pressure, till all the juice is extracted. The liquor, as it is pressed out, runs into a copper, until it is two-thirds full. A fire is now lighted, and the contents of the copper are raised to a temperature of about 180° Fahr. In the mean time, a mixture of lime and water has been prepared, by gradually pouring as much water upon ten pounds of quicklime as will give a cream-like consistency to the mixture. This is poured into the copper when its contents are at 180°, and is well mixed with the juice by stirring. The heat is then increased till the mixture boils, when a thick and glutinous scum rises to the surface. As soon as clear bubbles arise through this scum, the fire is suddenly extinguished by water being poured on it, or by a proper damper. The scum hardens as it cools; and the sediment being deposited, the liquor becomes clear, and of a light straw colour. The scum is then carefully removed with a perforated skimmer, and is put into a vessel till such time as the liquor remaining in it can be pressed out. A cock is now opened about five inches above the bottom of the boiler, and all the clear liquor is drawn off. Another cock, lower down, lets out the remainder until it begins to appear cloudy; that which still remains is afterwards boiled again with that extracted by pressure from the scum. The clear liquor is now subjected to evaporation in another boiler which is wide and shallow. The bottom is but slightly covered with the juice at first, and it boils rapidly. As the water evaporates, fresh juice is admitted. When a certain degree of inspissation, or thickening, has taken place, animal charcoal is gradually added; in such proportion, that one hundred weight of charcoal is required for the juice of two tons and a half of beet, which is now reduced to about four hundred gallons. The evaporation by boiling continues until a regular syrup is obtained. This is now strained through a linen bag, and the liquor is kept flowing by means of steam or hot air, and assisted by pressure. In two or three hours all the clear syrup will have run through.

The syrup then goes through a farther succession of processes to convert it into sugar. It is again boiled and skimmed, until it has attained a certain degree of concentration, which is known thus;—the skimmer is dipped into the syrup and drawn out; some of the thick syrup which adheres to it is taken between the thumb and finger, and held there till the heat is reduced to that of the skin; the finger and thumb are then separated, and if the syrup be of a proper strength, a thread will be drawn out, which has the transparency of barley-sugar. When the syrup has this proper degree of consistency, called "proof," the fire is put out, and the syrup is carried to the cooler, which is a vessel capable of containing all the syrup produced by four operations or boilings. Here the sugar is to crystallize. As soon as this process commences, the whole is well mixed and stirred; and, before it becomes too stiff, earthen moulds, of the well-known sugar-loaf shape, are filled with the crystallizing mass. When these moulds are full, they are carried to the coolest place on the premises. As the crystallization goes on, the crust formed on the top is repeatedly broken, and the whole is stirred till the crystals are collected in the centre; the crystallization is then allowed to go on without further disturbance. In three days the process is so far advanced, that the pegs which are put into the holes at the points of the moulds may be taken out, and the molasses or uncrystallizable syrup allowed to run out. White syrup is then poured on the top of the

moulds, which filters through the mass, and carries part of the colouring matter with it.

Sometimes this latter process is effected by what is termed *claying*. A stratum of fine moist pipe-clay is laid on the sugar in the mould; and clear water being poured on the clay, filters through it, and carries off the colouring manner remaining in the sugar. But if great care be not taken, one-fifth or sixth of the sugar becomes dissolved, and is carried off in the form of syrup. Chaptal at one time employed, instead of either of these two methods, another in which alcohol was poured on the sugar, in such manner as to carry off the colouring matter. But he abandoned the plan after two months' trial; finding that he lost a considerable quantity of alcohol, and that the sugar retained a little odour of the alcohol.

By whatever mode the sugar is bleached in the moulds the loaf is removed from the mould as soon as hardened, and placed in a stove, where it remains till dry.

The molasses, or uncrystallizable syrup, which remains from this process, is very nearly identical with that produced from cane-sugar, and from which *rum* is distilled. We shall not, therefore, detail the plan which Chaptal adopted for distilling spirit from the molasses, as that is an operation which does not belong to a sugar refinery.

The greater part of the operations described above are nearly the same as those by which sugar is prepared from the juice of the sugar-cane, except that much greater skill and nicety are required, on account of the smaller comparative quantity of sugar contained in the beet. But when the sugar is once prepared, it is impossible to distinguish it from cane-sugar. Five tons of clean roots produce about four and a half hundred-weight of coarse sugar, which give about a hundred and sixty pounds of double-refined sugar, and sixty pounds of inferior lump-sugar. The rest is molasses, from which spirit may be obtained. The dry residue of the roots, after expressing the juice, consists chiefly of fibre and mucilage, and amounts to about one-fourth of the weight of the clean roots used. It contains all the nutritive part of the root, with the exception of four and a half per cent. of sugar, which has been extracted from the juice, the rest being water.

The political and commercial considerations involved in the question, how far the cultivation of the beet-root will permanently benefit France is one into which we need not farther enter, as it has no particular relation to our own country.

ON CHESS. No. XV.

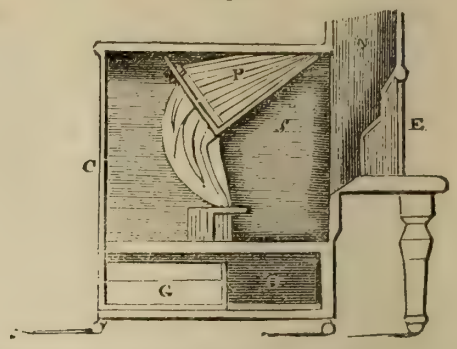
The Automaton Chess-Player. 3.

At the time when the automaton made its first appearance in England, chess was extensively patronised and played by the upper classes of society. The great Philidor spent a large portion of his time in London, formed a large chess-school around him, and excited public attention by those wonderful exhibitions for which he was so celebrated; viz., playing at the same time three different games against three good players, without seeing any one of the chess-boards. These circumstances contributed to make the chess-automaton a subject of the greatest curiosity, and although the sum of five shillings was charged for admission to see the automaton, yet hundreds and thousands of persons crowded to the exhibition.

Mr. Twiss, in his amusing work on Chess, informs us that he was present on some of these occasions, and conversed with M. de Kempelen, who once remarked:—

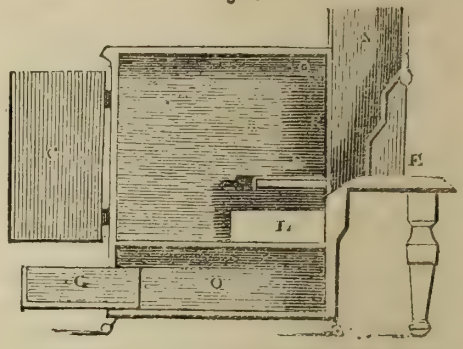
That the most surprising circumstance attending his automaton was, that it had been exhibited at Presburg, Vienna, Paris, and London, to thousands, many of whom were mathematicians and chess-players, and yet the secret by which he governed the motion of its arm, was never discovered. He prided himself solely on the construction of the mechanical powers by which the arm could perform ten or twelve moves: it then required to be wound up like a watch; after which it was capable of continuing the same number of motions. The automaton could not play unless M. de Kempelen or his substitute was near it, to direct its moves. A small square box during the game, was frequently consulted by the exhibitor; and herein, (says Mr. Twiss,) consisted the secret, which he told me he could in a moment communicate. He who could beat M. de Kempelen was of course certain of conquering the automaton.

Fig. 5.



A vertical section of the Chest, with the false back raised. Side view.

Fig. 6.



The same, with the false back closed. Side view.

This last assertion, however, is by no means true, as we shall see hereafter.

The *Monthly Review*, for April 1784, has the following remarks;—

Many are simple enough to affirm that the wooden man played *really, and by himself*, (like certain politicians at a deeper game) without any communication with his *constituent*. It appears, indeed, as yet unaccountable to the spectators, how the artist imparts his influence to the automaton at the time of his playing, and all the hypotheses which have been invented by ingenious and learned men to unfold this mystery are but vague and inadequate; but were they even otherwise, they rather increase than diminish the admiration that is due to the surprising talents and dexterity of M. de Kempelen.

A pamphlet was at the same time published in London, entitled, *The Automaton Chess-player Exposed and Detected;* in which the author says:—

I see a foreigner come among us, and demand five shillings a-piece admittance, to see what he calls an automaton chess-player. An automaton is a self-moving engine, with the principle of motion within itself; but this chess-player is no such thing. And therefore to call it an automaton, is an imposition, and merits a public detection; especially, as the high price of five shillings for each person's admission, induces the visitor to believe that its movements are *really* performed by mechanic powers: when, in fact, the whole delusion is supported by invisible confederates.

The opinion became very common that the automaton was moved by a concealed player, but where and how he was concealed after the apparently complete exposure of the interior of the machine, was as great a mystery as ever. One pamphleteer declares that he saw the ermine trimmings of the Turk's outer garment move once or

twice, when the figure should have been quite motionless; and he is convinced that there is a concealed confederate: "for," says he, "they only exhibit the automaton from 1 till 2 o'clock, because the invisible player could not bear a longer confinement; for if he could, it cannot be supposed that they would refuse to receive crowns for admittance from 12 o'clock to 4, instead of from only 1 to 2."

The automaton in the course of its travels visited, by special invitation, the court of Frederick the Great, at Berlin, where it conquered the monarch and his whole court. Eager to possess himself of the secret, Frederick for a large sum of money bought the automaton, and in a secret interview with M. de Kempelen learnt the whole art and mystery of this wonderful machine. Certain it is, that like a child who cries after a new toy and no larger regards it when possession has shorn it of its novelty, Frederick threw aside the automaton, and for many years it lay forgotten and neglected among the worn-out furniture of the Royal Court of Berlin.

M. de Kempelen died at Vienna in 1804. In 1806 when Napoleon occupied Berlin, we find the automaton chess-player under another master, and prepared again to astonish the world. Napoleon played a game with the automaton. After a few moves he purposely made a false move; the automaton inclined its head, replaced the piece, and made a sign to Napoleon to play correctly. He did so, and after a few moves, again played a piece incorrectly. On this occasion the automaton removed the piece from the board and played its own move. Napoleon was highly amused, and after a short time made a false move for the third time, when the automaton swept the pieces from the board and declined to continue the game.

We need not trace the progress of the automaton in a second tour that it made through various cities of Europe, until we again find it in London in 1819. We will merely stop for a moment at the Court of the king of Bavaria, to relate an anecdote of Prince Eugene Beauharnois, the king's son-in-law, told so amusingly by Mr. George Walker—

Eugene was fond of chess, and money was of little object. He could not resist the temptation of acquiring the secret which had set the wits of the world at defiance for so many years; and for the second time was the automaton chess-player sold like a slave for a price. Thirty thousand francs were asked by the proprietor,* and this sum was unhesitatingly paid by Prince Eugene for the machine and its key.

And now the moment has arrived when the treasured mystery of de Kempelen is to be again opened at the golden bidding of royalty. The veil is about to be raised and the curiosity of the king to be gratified. The courtiers are dismissed the room, the door locked by Eugene, and every precaution taken to ensure his acquiring the sole knowledge of the hidden enigma. The prince is alone with the demonstrator; the latter, unhesitatingly and in silence, flings open simultaneously all the doors of the chest; and Prince Eugene saw—what he saw!

Eugene, somewhat like his royal predecessor in the secret, found that when once revealed, the automaton was not worth keeping. He therefore acceded to the proposal of M. Maelzel to return him the machine on condition of paying interest for the purchase money. The automaton again proceeded on its travels—visited Paris, and was received with enthusiasm, and by the year 1819 it was again established in London in Saint James' Street.

Crowds of visitors flocked to the exhibition: the periodical literature of the day gave it almost unqualified praise, and the success was the more complete in consequence of the automaton vanquishing all its opponents with a few trifling exceptions. This encouraged the proprietor to offer odds to all comers, and forthwith the automaton gave the pawn and move to all its antagonists, and scarcely lost one game in a hundred. A volume was published in 1820 entitled, *A Selection of Fifty Games, from those played by the Automaton Chess-player during its exhibition in London in* 1820. *Taken down by permission of Mr. Maelzel at the time they were played.* In the preface to this work it is stated that:—

Since the commencement of its exhibition in February last, the automaton chess-player has played, (giving the pawn and move) nearly three hundred games, of which it has lost about six.

In our next article we will fully explain the mystery of the Automaton Chess-player.

* M. Maelzel, the celebrated fabricator of the musical metronome and other works of art.

PROBABLE ORIGIN OF THE DOCTRINE OF THE SUPREMACY OF THE POPE.

For many centuries, Rome has been a city of splendid ruins, with no empire except that vast supremacy which is rested upon the supposed grant of the Almighty.

At the time when the apostles Peter and Paul established the Church in Rome, it was the capital city of the civilized world. On such a capital, perhaps, the sun never shone. It is saying much less than the truth to assert, that what Paris is to France, or London to England, Rome was to the world; because France and England know that there are other powers upon the earth independent of their respective governments; but the subjects of that empire-city saw no power upon the earth independent of Rome. The ambassadors of every potentate came to do homage before the majesty of a single throne. Dissensions amongst nations were brought for settlement before the senate. Rival kings, contending for the same tributary diadem, submitted their claims to that august tribunal. The very name of Roman citizen was a protection and a privilege in every land, and an appeal to Rome was the final recourse of universal justice.

In our age, it is not easy—indeed it is hardly possible—to conceive aught of such a city. Divided as the nations have been ever since her decline and fall, and each government displaying but a fractional part of her whole dominion, it is hard for us to imagine the majesty, the force, the concentration, the harmony, the glory, the beauty, the overpowering splendour of the spectacle which ancient Rome, in the days of Augustus, displayed to the admiration of a subject world. To the moral sense, the picture was as sublime as it was beautiful. The whole earth in peaceful subordination to one man, and he content with the kind and moderate titles of general and father—the temple of Janus shut, and wars and commotions almost done away by the wise administration of supreme justice—the whole of the mighty empire bringing its treasures and its allegiance to the great centre, which was its fountain-head of power, and enjoying in return the rich advantages of protection and government, the valour and the labour of its legions, its science, and its literature, which, like the nerves and life-blood of the natural body, were diffused freely to the remotest extremities—all this displayed a picture of human unity, on which, in its theory, the philanthrophist and the philosopher might well gaze with delight; nor can I imagine how, with such a picture before them, the minds of the best of men at that day could help being strongly affected.

About the time when the last touch of perfection had been given to this wonderful empire, Christianity arose, and a Church was established in the imperial city. In wealth, in numbers, in importance, it is obvious that it must soon have surpassed all other. Everything in the chief city of an ordinary kingdom acquires a kind of practical supremacy over the whole of that territory. The professions, the trades, the fashions, the literature, the amusements of the capital, give a sort of law to the rest, by a perfectly familiar principle of deference, which is acknowledged and understood by all men. What must

have been the strength of that principle in regard to imperial Rome?

But, perhaps, it may not be useless—inasmuch as the mind is often aided in its reflections on the force of circumstances by transferring them to some familiar object of our own day,—if I try to illustrate my idea of a secular supremacy by a simple analogy.

Let us suppose, then, that we had sent a number of missionaries to plant the Gospel in China, who had succeeded in establishing Churches in several of the provinces of that extensive country. In the progress of their labours, we are informed that a Church is gathered in the capital itself. The emperor, the powerful mandarins, the officers of government, the men of influence, are now likely to be brought under the blessed yoke of the Gospel. Is it not reasonable that we should attach tenfold more importance to that Church than to the provincial Churches—that for its support we should be most anxious—that into its progress we should most fondly inquire, and that we should expect, nay advise, all the other missionaries through the nation to be most solicitous for its welfare, and most ready to make its advancement the primary object of their prayers and toils?

If, however, such would be our views, at a distance from the field of action, how much more would the same principle of expediency operate on the missionaries themselves! Of what vast importance would they esteem the progress of truth in the capital of the Chinese empire! How surely would they calculate that success *there*, was, in fact, success every where! How thankfully would they count the numbers of converts from the ranks of the influential and the great, not because their souls were of more value, but because the conversion of such as these was the readiest mode of breaking down the kingdom of darkness, and inducing multitudes to examine, with favourable dispositions, the system of truth; and how manifest it is, that, in such a case, the missionaries settled in the provincial Churches would readily grant a primacy of influence and consequence to their brethren in the capital city, which would make them the chief leaders, advisers, and, in fine, directors of the whole! And yet, in all this, we see at a glance that it is simply to be resolved into the importance of the local situation, that it has no connection whatever with the spiritual rank or ecclesiastical dignity of the missionaries themselves, but is purely the result of judicious views of practical expediency.

Now, then, if we were called to draw up a code of regulations for a body of missionaries thus circumstanced, should we not, perhaps, think it proper to advise all due regard to these principles? Should we not say, Be careful about union, and in all your proceedings consult together, but especially do nothing without consulting with your brethren of the capital city. In order that the good cause should prosper it is necessary that you should resort to the Church established there as often as you can: by reason of its more powerful principality, being the seat of the government, and the very heart of the empire, the Church located there is the most important of the whole, and the brethren placed over it should have the chief direction in all your councils. Would not such advice as this be deemed prudent and wise by all men? And hence, is it not plain that we could go very far in support of a primacy, without departing in the least from the ground of secular superiority derived simply from the importance of the location?

But in the situation of the Christian Church, as planted in ancient Rome, there was much more than any modern analogy can furnish, to contribute to the same result. During seasons of persecution, when heathen rage was excited against the faithful, *The Christians to the lions!* was the first cry, and the Church in Rome was usually called upon to take the lead in the glory of martyrdom. In times of peace the crowds of philosophers and disputers which thronged the imperial city, drew out the best talents and strongest energies of the priesthood in the defence of truth. And the influx of strangers, the applications for aid, and the calls on liberality, which were sure to be most abundant where there was most inducement to attract them, would keep the sympathies, the hospitality, and the beneficence of that Church in the fullest action. Add to all this, that if the Christians in the provinces needed any indulgence from the government, their request could be best presented through the brethren at Rome; that the bishop of Rome was on the very spot where he had the best opportunity of appeasing the imperial wrath, or conciliating the imperial favour; that when the clergy or others had occasion to travel, his letters would have the greatest weight by reason of his local superiority; that when any of the prætors or provincial magistrates were likely to prove hostile to the Christian cause, the bishop of Rome was the only one who could hope to have influence sufficient with the officers of the court to have them counteracted or recalled; that writers on the Christian religion would first seek patronage and praise from the same dignitary, and that all who thought themselves aggrieved throughout the rest of the Church would naturally endeavour to strengthen their cause by the sentence of his approbation,—all this, and much more of the same character, suggests itself to a mind of common reflection, in tracing the various causes of the secular primacy obtained by that Church which was established near the throne of the Cæsars, in the empire-city of the world.

The last feature of the case presents the influence which these circumstances must have exerted on the minds of the Roman clergy themselves, when connected with the important fact that the secular empire of Rome was one mighty whole—the earth under one head,—the world under a single prince, and that prince called a father. Dull and stupid must the intellect have been that could fail to discover the application of this idea to the Christian Church,—for was it not in truth one kingdom under a single King?—one family under a Father? And why not give the benefit of this consolidation to the hierarchy on earth? Why not secure to the whole Church that order, and subordination, and peace under a single earthly head, as the Lord's vicegerent, which heathenism had brought, in the affairs of human government, to such a marvellous system? Should the hosts of Satan be better marshalled than the hosts of God? Should one single will be felt and obeyed to the remotest bounds of that mighty empire, and should not one single Church, which is the spouse of Christ, be much rather the ruler and mistress through the whole of Christendom? On such a plan, how much more union might be expected; how much more peace; how much less opportunity for heresy and false doctrine; and how much more glorious would be the victory of the Lord's people, when they should appear to the heathen one mighty host, "bright as the sun, fair as the moon, and terrible as an army with banners."

I can easily conceive that the best men of the primitive ages, being accustomed to have this astonishing empire of the world continually before their eyes, and to hear it as the common and favourite theme of the orators, and courtiers, and civilians, and soldiers, and travellers round them, might readily in this manner, be led to contemplate the desirableness and practicability of a similar system in the Church, and to cherish and encourage every advantage they possessed for its perfect consummation, as providential instruments placed in their hands by Divine wisdom, for this especial purpose. I can easily conceive, that under this influence of their habitual views, they would find, in Scripture, analogies, and even declarations, which—had not the idea of universal empire been first rendered familiar by the political state of the world—would never have occurred to them. That thus disposed, they would derive a supposed

parallel in principle from the high priest of ancient Israel, and instead of applying it to the single district of a bishop, would apply it to the whole of Christendom—that they would lay hold on our Lord's addresses to Peter (the only passages in the New Testament which ingenuity itself could put into the semblance of Divine authority,) and begin to interpret them in favour of their ecclesiastical empire,—that all who were connected with Rome, who had obligations to the Church there, who feared their censure or loved their praise, or who had anything to expect from their influence, would readily adopt the system; and that the converts amongst the great and noble, who had been accustomed to the maxim, that Rome was the mistress of the world, would be prompt and zealous in defence of an idea which harmonized so well with their own political and patriotic feelings—all this I can conceive most readily, as easily accounting for the rise and progress of a secular primacy, without calling it by any harsh or offensive name. I do not, therefore, look upon your doctrine as having its *origin* in tyranny, in fraud, or in a desire to lord it over mankind. Its beginning, I think, I have traced to a much better set of principles. And as I hold myself bound in all cases to look for the most favourable motives and causes of human action, so I attribute to the policy of the primitive Church of Rome nothing more than can be fully explained by the favourable influence of their location, their habits of dwelling on the theory and practice of universal empire, and their desire to secure the unity and peace of the Church; on the supposition that they were holy and well-meaning men.

Of the difference between the local primacy and that now asserted, I shall only for the present observe that the one was secular, the other is spiritual; the one was human, the other is divine; the one interfered with the liberty of no other Church, the other claims authority over the whole. The one grew out of the political pre-eminence of ancient Rome, and should now be yielded, of right, in their respective proportions, to the other cities, which, in the order of Providence, have attained a far larger measure of influence over the affairs of men; but the other insists on the fiat of the Almighty, superior to all earthly mutation, that Rome shall be the mother and the mistress of the Christian world to the end of time.—Bishop Hopkins.

ON DREDGING.

Among the great effects produced by apparently small causes may be ranked the accumulation of sand and mud in rivers, harbours, canals, and basins, by the settlement of the solid matters brought down by rivers from the land. The sand-banks near the mouths of the Scheldte, the Meuse, the Rhine, the Elbe, the Thames, the Humber, and other considerable rivers, furnish important evidence of the extent to which this subsidence often proceeds, and of the serious consequences which result therefrom to shipping. Geologists have enumerated many remarkable instances of the effects thus produced, in which a place, once regarded as a sea-port, is now to all intents and purposes an inland town, such as Sandwich in Kent, by the subsidence of sand and mud on the banks. It forms no part of our present object to enter into a geological inquiry on this matter, but to detail the means whereby a river, when too much choked with sand and mud, is cleansed.

The Dutch, whose country presents an extraordinary example of the effects of these fluviatile deposits, long ago devised an apparatus called the *spoon-dredging machine*, for removing some of the sediment from the beds of their rivers and harbours. From the Dutch its use passed to the English, and we may now frequently see such an instrument employed on the River Thames, although not so often as before the introduction of steam-dredging machines.

The cut at the end of this article will show pretty clearly the action of the spoon-dredging machine. In the first place, there is a boat, varying in size according to the situation in which it is to be worked, but generally from twenty to sixty tons burden. It is built so as to float with an easy draught of water, and is usually built as an open boat, with a kind of inner floor; but in some cases it is flush-decked, carrying its cargo wholly upon deck. Sometimes the matters excavated from the bottom of the river are employed in banking on the sides of a river, or in ballasting ships, but in other instances emptied out into some deeper part of the same river; and when the latter is the case, the boat is provided with a kind of trap-door at bottom, to let out the mud. In this case a hold of two compartments, one fore and one aft, is formed, represented in the cut by the lines passing obliquely downward, and shaped like a hopper, narrower at the bottom than at the top. Each of these apertures has an opening in the bottom, through which the mud is dropped when the flap-door A is opened.

The spoon or shovel B consists of a strong ring or hoop of malleable iron, the cutting part of which is of steel; it is about six or seven feet in circumference, and properly formed for dredging upon soft mud or gravelly ground. To this ring is strongly attached, by means of thongs, a large bag, made sometimes of bullock's hide, but more generally of tanned leather; and peforated with a number of small holes, for allowing water to drain off. This bag, the capacity of which is about four or five cubic feet, being fixed to the ring, the spoon-bowl thus formed is attached to a pole thirty or forty feet long, or else to a pair of sliding poles, so connected as to admit of being lengthened or shortened according to the depth of the water in which the apparatus is to work. A rope is attached to the bottom of the bag, for directing its position at the commencement of each operation. The apparatus is generally worked with a chain or rope, brought from the spoon to a winch worked with wheel and pinion, through a block suspended from a small crane used for hauling the bag and its contents along with the progress of the boat, and in lifting the spoon over the gunwale to be emptied into the hopper of the boat. The purchase rope is led along the deck to the winch, by a block placed in a proper direction for this purpose. These boats are generally managed by two, three, or four men, who with this simple apparatus can lift from twenty to sixty tons of sediment from the bottom, at a depth of two and a half or three fathoms, when the ground is somewhat loose and favourable for the operation. Their mode of proceeding is as follows:—The barge being moored over the place where it is proposed to dredge, and one end of the working-rope being fastened to the chain of the spoon, and the other end to the barrel of the crane, the man who is stationed at the handle or pole of the spoon, immediately allows the spoon to fall into the water. At the same moment the man at the crane-work throws it out of gear, when a third man seizes the small rope which is fastened to the bottom of the bag, and runs with it along the gunwale, and prevents the spoon from sinking until it gets to the other end of the barge. When this is effected, the man at the pole turns it up, inclining the pole head towards the crane-end of the barge, and takes a turn with a small rope round the pole and rail of the vessel, which keeps the spoon dredging along in its proper position. The man at the crane draws along the spoon until it be nearly under the crane, when the man at the pole inclines it backward, and the contents (now deposited in the bag) are hoisted up and emptied into the barge.

In Holland, this apparatus, and other simple modes of dredging, are much practised upon the extensive flats at the entrance of their great navigable rivers, in connexion with the sluices and natural currents

issuing from their extensive basins and canals, and the excavated matter is generally of a mossy description, which, after being strongly compressed in moulds by that industrious people, is in a state to be speedily used as turf-fuel.

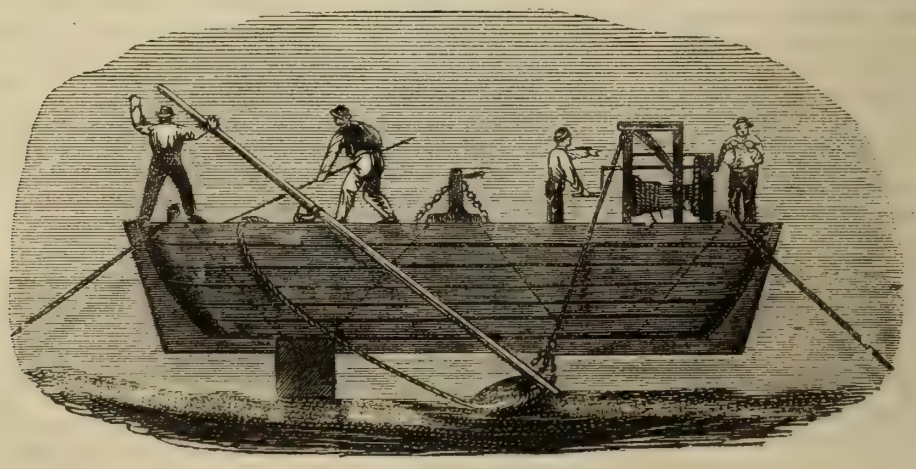
On the Thames (says a recent writer) the spoon-dredging machine is conducted upon a large scale, and in the most systematic manner, under the immediate direction of the Trinity Board. The stuff brought from the bottom consists chiefly of mud and gravel. This is not only a useful operation for deepening and preserving the navigation, but the stuff itself is sold to good advantage, as ballast for shipping. To such an extent is this carried that the colliers, or shipping from London to Newcastle, have raised ballast-hills in the neighbourhood of Shields, which, from their vast extent, have become objects of no small curiosity.

Another kind of dredging-machine, formerly much employed in the river Clyde, and other parts of Britain, consists of a large plate of iron, about four feet long and eighteen inches deep, and sharpened on the under edge. To each end of this plate of iron a plank of hard wood is fixed to tenons cut in the iron, the sharpened edge of iron projecting about four inches below the wooden sides. The whole forms something like a box, without top or bottom, eighteen inches deep at the one end and ten inches at the other. From the two extreme points of the wood a chain is fixed, for attaching the principal working rope or chain. In order to put the machine in motion, it is requisite to have a punt moored on each bank of the river directly opposite, and on each of these punts a capstan, or windlass, the one for drawing across the empty dredge, and the other for bringing it back. In the course of its passage the dredge is generally filled, and by means of the capstan it is drawn so high up that men at low water can remove the stuff with shovels. Where the shiftings are not frequent a capstan or windlass may be placed on the bank of a river, and the operation performed as before. But as this method is very tedious where dredging of great extent is required, it is now little used except in levelling foundations under water, for which it is well adapted, if the material is soft sand or mud.

But by far the most complete and effective dredging-machines are those which consist of an endless chain of buckets, ascending full and descending empty, each bucket collecting its cargo of stuff when at the bottom of the river. Such machines, when first introduced, were worked by men, but when the principles on which such machines act were more fully ascertained, horses were employed, who worked round a covered gin-trap, or circular path within the boat. Still more recently, when the importance of substituting steam-power for that of horses and men has been so clearly seen, steam-dredging machines have been constructed, and are now used in various parts of Britain.

One of the most complete dredging-machines ever constructed was made for the harbour of Aberdeen a few years ago. The vessel and the steam-engine, as well as the dredging apparatus, were all made expressly for the purpose, and for each other. The vessel is ninety feet long, and twenty-two broad, with a longitudinal opening along the middle of the ship, extending more than half its length, being fifty-four feet long, and intended for the reception of the frame containing the buckets. The vessel draws only four feet of water, but the bucket-frame can be lowered so as to dredge at a depth of fifteen feet. One half of the length of the vessel, as just observed, has a longitudinal slit or opening through which the buckets descend into the water, and the other half contains the steam-engine by which the buckets are worked. The bucket-frame is a kind of ladder, placed in a diagonal direction, through the middle line of the ship, part being above, and part dipping into the water. The frame is fifty-two feet in length, each side being of one entire piece of oak timber. The two ends of this frame serve as supports for a chain to which the buckets are attached. The links of the chain weigh, some forty-four, and others eighty-four pounds each. The buckets are twenty-one inches deep, twenty-six inches wide in one direction, and from fourteen to nineteen in the other. The operation, then, is this. The steam-engine sets some machinery in motion, which moves the chain to which the buckets are attached, and the buckets are thus drawn alternately up and down, having their mouths or open top uppermost when ascending, and lowermost when descending. The length of the chain is so regulated that the buckets may just dip or scrape into the mud at the bottom of the harbour, and the mud, when hauled up, is emptied into barges placed alongside the vessel. The expense of this apparatus in its complete state was nearly five thousand pounds.

In most bucket-dredging machines there are two series of buckets, one on each side of the vessel, but the mode of operation is nearly the same in both cases, the chain of buckets in each being arranged in an inclined position from head to stern of the vessel, and the buckets alternately ascending and descending, full in the former position and empty in the latter.



THE SPOON DREDGING MACHINE.

LONDON: Published by JOHN W. PARKER, West Strand, and sold by all Booksellers.

THE

Saturday Magazine.

Nº. 586. AUGUST 21ST, 1841. {PRICE ONE PENNY.

THE BANKS OF THE THAMES. VI.

STAINES' STONE.

We now approach that part of the Thames at which it receives the waters of the river Colne, about two miles above the town of Staines. This river rises in Hertfordshire, not far from St. Albans, and after passing by Watford, becomes the boundary between the counties of Middlesex and Buckingham; continuing its course through Uxbridge to the Thames.

The Thames then flows between Egham and Staines, the former being on the Surrey and the latter on the Middlesex side; Egham is a large village, in the north-west corner of the county of Surrey. It consists of one street, nearly a mile in length. The church, apparently of considerable antiquity, has externally but a mean appearance: it is built of stone, with a modern mixture of brick, and is covered with a white stucco. On the north side of the street is a range of alms-houses, founded in 1706, by Mr. Henry Strode, merchant of London, for six men and six women, who must be sixty years of age, and have been parishioners of Egham twenty years without receiving any parochial relief. The centre of this building, which exhibits an appearance of neatness and comfort, is the residence of a schoolmaster, who has a salary for educating twenty poor boys of Egham. This village furnishes a remarkable instance of the effect which changes in the modes of travelling will often effect in the prosperity of particular places. A topographical writer, in describing Egham as it was a few years ago, says:—"This place has many respectable inns, and seems to be in a thriving state, the principal source of its prosperity being derived from its situation as a great thoroughfare from the metropolis to the west and south of the kingdom." This account is no longer true. The communication by railway from London to the south-western parts of England has removed almost the entire stage coach trade from Egham, and caused the closing of many of the inns.

Northward of Egham, between it and the Thames, is Runnymead, which will ever be celebrated in the history of this country as the spot where the assembled barons, in 1215, compelled King John, who had in vain resorted to the most criminal prevarications, to grant what is emphatically denominated *Magna Charta*, the Great Charter of the liberties of England. Here his assent was extorted; but the treaty is said to have been actually signed on an island in the Thames still called Charter Island, and included in the parish called Wraysbury, in Buckinghamshire. It was suggested some years ago, that a pillar should be erected on this spot, to commemorate an event which has had so marked an effect in the English character and constitution; but we believe that nothing of the kind has been put in execution.

Westward of Egham is an elevation called Cooper's Hill, which has acquired a certain degree of celebrity from a poem of the same name by Sir John Denham. This poem was written about two centuries ago, and appears to be a description of objects seen from the hill, rather than of the hill itself. Cooper's Hill, the professed subject of the poem, is not mentioned by name; neither is any account given of its situation, produce, or history; but, as has been ingeniously observed, it serves, like the stand of a telescope, merely as a convenience for viewing other objects. Dr. Johnson, speaking of this poem, said:—

Cooper's Hill is the work that confers upon Denham the rank and dignity of an original author. He seems to have

been, at least among us, the author of a species of composition that may be termed local poetry, of which the fundamental subject is some particular landscape, to be poetically described, with the addition of such embellishments as may be supplied by historical retrospection, or incidental meditation. To trace a new species of poetry, has in itself a very high claim to praise; and its praise is yet more, when it is apparently copied by Garth and Pope.

The associations connected with this spot are rendered perennial by the lines of Pope:—

Bear me, oh! bear me to sequestered scenes,
To bow'ry mazes and surrounding greens;
To Thames's bank, which fragrant breezes fill,
Or where the Muses sport on Cooper's Hill.
(On Cooper's Hill eternal wreaths shall grow,
While lasts the mountain, or while Thames shall flow.)

I seem through consecrated walks to rove,
I hear soft music die along the grove:
Led by the sound I rove from shade to shade,
By god-like poets venerable made.
Here his first lays majestic Denham sung;
There the last numbers flowed from Cowley's tongue.

From Egham we cross the Thames by a bridge to the town of Staines. Staines Bridge is a handsome stone structure, erected in lieu of an earlier iron bridge with a single arch, which was not deemed safe. Staines is a market town, with about two thousand inhabitants. It has been much improved of late years, and consists principally of one wide street, containing some good houses, and terminating at the foot of the bridge. The church, dedicated to St. Mary, and originally erected in 1631 by Inigo Jones, has been recently rebuilt; it is a neat structure, with a square embattled tower; the interior, which is well arranged and handsomely fitted up, contains about three hundred and fifty free sittings.

Staines, or Stanes, as it was formerly called, is supposed to have derived its name from the Saxon word *stana* or stone, because, within its parochial limits, the stone has immemorially stood, which marks the extent of the city of London's western jurisdiction on the Thames. It stands on the banks of the river, at Colneditch, at a small distance from the church. On the upper part of the stone, which is much decayed, is inscribed, "God preserve the city of London, A.D. 1280." This stone was, during the mayoralty of Sir Watkin Lewes, in the year 1781, placed on a new pedestal, whose inscription informs the reader that it was erected exactly over the spot where the old one formerly stood.

This stone marks a boundary, beyond which the conservancy of the Thames passes into other hands; and we take the present opportunity to offer a few explanatory remarks on this subject. There is a homely proverb, that "every body's business is nobody's business;" the truth of which would be soon shown if such a river as the Thames were left without definite arrangements being made for its conservancy. Before the year 1771, the navigation of the river was very imperfect. It was carried on in large barges of two hundred tons burden, drawing four feet water, passing downward by the force of the stream, and upwards by the tractive force of men or horses, walking on the banks. In some cases the barge was pulled along by twelve or fourteen horses, or by a gang of men varying from fifty to eighty. But in the year which we have mentioned, an act of parliament was passed for improving the navigation from the metropolis to Cricklade; and soon afterwards another act vested the jurisdiction of that part of the river between London and Staines in the corporation of the city of London, which has in consequence made considerable improvements, by the construction of towing-paths, locks, and other works. The jurisdiction of the corporation extends from Staines to the Crow-stone, near Southend, including part of the rivers Medway and Lea. It is the office of the lord mayor's deputy, the water-bailiff, to search for, and punish, all persons who infringe the laws made for the preservation of the river, and its fish; and in order to maintain the rights and privileges of the river, the lord mayor holds a court of conservancy eight times in the year, in the four counties of Middlesex, Surrey, Kent, and Essex.

With regard to the portion of the Thames above Staines, we shall avail ourselves of a pamphlet published a few years ago by Mr. Allunt of Henley. Whether any changes have occurred since then, we do not know; but we shall give the substance of the statement made by him. The upper portion of the Thames, extending from Staines to Lechlade in Gloucestershire, a distance of one hundred and nine miles, is divided into five districts; the first, from Staines Stone, to Boulter's lock, by Windsor and Maidenhead; the second, from thence to Mapledurham lock, by Marlow, Henley, and Reading; the third, thence by Wallingford to Shillingford bridge; the fourth, from thence by Abingdon to Oxford; and the fifth, from Oxford to Lechlade. By various acts of parliament, the management of these districts of the Thames is placed in the hands of disinterested commissioners, consisting of gentlemen of the counties bordering on the river, possessing 100*l.* a year real, or 3000*l.* personal estate. Six general meetings of these commissioners are annually held, at London, Windsor, Marlow, Reading, Wallingford, and Oxford. Empowered to raise by loans the sum of seventy-five thousand pounds, at an interest of five per cent., they have expended that and the annual surplus of the tolls, in making several pound-locks, mostly a hundred and twenty feet in length, by eighteen in width; and also in short side-cuts, situated in places where the river was formerly penned up for the purpose of working mills, or for fishing. Considerable sums have also been expended in making a convenient horse-towing path along the whole navigation, in ballasting the channel where necessary, and in other improvements, by which vessels are enabled to navigate without obstruction at the depth of three feet ten inches in all seasons. By these improvements and the judicious regulations adopted by the commissioners, the navigation was rendered to a certain degree safe and expeditious. The supply of water is generally abundant, from the many tributary streams flowing into the Thames. Barges usually go down the river at the rate of from twenty-five to thirty-five miles a day; and up from twenty to thirty miles. The tolls are three-pence per ton at each pound lock, or six shillings and nine-pence per ton for two hundred and eighteen miles; besides a toll of about two shillings per ton throughout to the weir-owners. The trade in the Thames has been sufficient to yield a sum large enough to keep the works in repair, and to permit a considerable amount to be expended in new works. This account was given before the age of railroads commenced; it is probable that many modifications have been produced in the amount of traffic along the upper course of the Thames.

We now leave Staines, and proceed in our tour down the river. Not far from this town, St. Ann's hill appears in a very conspicuous and elevated situation, offering a picturesque object at various bends of the river. Laleham soon appears in sight; a spot famed for the entertainment it affords to the lovers of angling. The river at Laleham narrows considerably, and about the shallows the water is beautifully transparent. Here the tranquillity of the scenery, the various objects perpetually gliding on the stream, and groups of cattle from the adjacent meadows drinking at the river, all contribute to form a picturesque assemblage.

From Laleham, the river proceeds in a course nearly due south, for a distance of about three miles, to Chertsey, a pretty market-town on the Surrey side of the river. Chertsey formerly derived consequence from its abbey, which ranked among the more considerable monastic institutions of the country; and possessed

annual revenues valued at the time of the dissolution at about seven hundred pounds. Some of the outer walls are the only remains of this once celebrated edifice. On the site of the abbey, (which once contained the body of Henry the Sixth,) Sir Henry Carew, master of the buck-hounds to Charles the Second, built a handsome mansion, called the Abbey-house. Across the Thames at Chertsey is a bridge of seven arches, built of Purbeck stone, at an expense of about thirteen thousand pounds.

The poet Cowley resided in Chertsey some time, and died in what was called the Porch-house. He retired to this quiet spot from disgust, wearied out with the vexatious attendance upon a court, and the fatigues of business. In this retreat he vainly flattered himself with meeting uninterrupted harmony; but the following letter, written by him to Dr. Spratt soon after his arrival at his new abode, speaks of a mind by no means satisfied and at ease.

Chertsey, May 21, 1665.

The first night that I came hither I caught so great a cold, with a defluxion of rheum, as made me keep my chamber ten days. And, two days after, had such a bruise on my ribs with a fall, that I am yet unable to move or turn myself in my bed. This is my personal fortune here to begin with. And, besides, I can get no money from my tenants, and have my meadows eaten up every night by cattle put in by my neighbours. What this signifies, or may come to in time, God knows; if it be ominous, it can end in nothing less than hanging. Another misfortune has been, and stranger than all the rest, that you have broke your word with me, and failed to come.

But we must now leave Cowley and his troubles; and will, in the next paper, proceed on our tour from the town of Chertsey eastward.

GARDEN HERBS.

Basil.

According to fabulous history this plant originated from the death of Ocimus, who first ordained the combats in honour of Pallas, and being killed by Cyclodemas, a famous gladiator, was immediately metamorphosed into the plant which bears his name.

The Greeks called this plant ὠκιμον on account of quickness with which the seed germinates. In modern botany the term Ocymum is applied to a genus of labiate plants remarkable for the fragrance of their leaves which are used as an ingredient in savoury dishes, for which reason some of the species have been, from time immemorial, very generally cultivated. They are known in our gardens as *basils*, the name *basilium*, (from the Greek word for *a king*,) having been applied to common basil by the monkish writers on plants in allusion to its regal qualities.

Basil is a native of the south of Europe, as well as the East Indies and some parts of Africa: it also grows wild in Persia. There are many varieties, of which Gerard enumerates several. He says:—

Great garden basil is of two sorts, differing from one another in bigness. The first hath broad, thick and fat leaves, of a pleasant sweet smell, and of which some are here and there of a blackish red colour, somewhat snipped about the edges, not unlike the leaves of French mercury. The stalk groweth to the height of half a cubit, dividing itself into divers branches, whereupon do stand small and base flowers, sometimes whitish, and often tending to dark purple. The root is thready, and drieth at the approach of winter.

Citron basil is very like unto the former, but is altogether lesser. The whole plant is of a most odoriferous smell, not unlike the smell of a lemon or citron, whereof it took his surname.

Bush basil is a low and base plant, having a thready root from which rise up many small and tender stalks, branched into divers arms or boughs, whereupon are placed many little leaves, lesser than those of pennyroyal. The whole plant is of a most pleasing sweet smell.

Indian basil sends up a stalk a foot or more high, four-square, and of a purple colour, set at each joint with two leaves, and out of their bosoms come little branches: the largest leaves are some two inches broad, and some three long, growing upon long stalks, and deeply cut in about the edges, being also thick, fat and juicy, and either of a dark purple colour, or else spotted with more or less such coloured spots. The tops of the branches end in spokie turfs of white flowers, with purple veins running alongst them. The seed is round, black and large. The plant perishes every year as soon as it hath perfected the seed.

This harmless and fragrant herb was the object of many superstitious prejudices among the ancients, and of much fierce debate among the old herbalists. The ancients were of opinion that if basil were pounded and put under a stone, it would breed serpents. Instead of putting this marvellous quality to the test, they continued to decry the use of the herb; and when it was transplanted into this country, our herbalists finding the climate too cold for serpents, transformed them into worms and maggots, which, as it is gravely stated, this herb will engender if it be only chewed and put into the sun.

Chrysippus, two hundred years B.C., condemned basil as being hurtful to the stomach, an enemy to the sight, and a robber of the wits. Diodorus stated, that by eating this herb, cutaneous insects are produced. Hollerus relates, that an Italian by frequently smelling this herb, bred a scorpion in his brain. According to Galen, "basil is hot in the second degree; but it hath adjoined with it a superfluous moisture, by reason whereof it should not be taken inwardly, but being applied outwardly, it is good to digest or distribute, and to concoct." Galen says further, that basil was eaten by many persons in his time, being corrected with oil and vinegar.

Gerard recommends the juice of basil to be drunk in wine of Chios, or strong sack, as a remedy for the headache. "Mixed with fine meal of parched barley, oil of roses, and vinegar, it is good against inflammations and the sting of venomous beasts. They of Africa do affirm that they who are stung of the scorpion, and have eaten of it, shall feel no pain at all."

Basil leaves a pleasant smell when rubbed with the hand; and it was formerly said that the hand of a fair lady made it thrive. Farmers in the times of Queen Mary and Queen Elizabeth planted it in pots to offer to their landladies or others who visited the farm. Tusser says:—

> Fine Basil desireth it may be hir lot
> To grow as a gilleflower, trim in a pot:
> That ladies and gentiles, for whom you do serve,
> May help her as needeth, poore life to preserve.

In our gardens basil is treated as a tender annual. It is raised in the spring in a hot-bed, and turned into a warm border when the summer is so far advanced that frosty nights are no longer to be feared. A slight frost would be instantly fatal to this plant.

The history of basil may be thus briefly summed up. *First*:—The ancients regarded it as a most viruulent and dangerous plant. *Secondly*,—The old herbalists were divided in opinion. Culpeper says;—"Away to Dr. Reason went I, who told me that bazil was an herb of Mars, and under the Scorpion, and perhaps, therefore, called basilicon, and it is no marvel if it carry a kind of virulent quality with it." Gerard agrees with Simeon Zethy that, "the smell of this plant is good for the heart and for the head: that the seed cureth the infirmities of the heart, taketh away sorrowfulness which cometh of melancholy, and maketh a man merry and glad." *Thirdly*,—Modern botanists regard basil as a simple garden herb, useful to impart flavour to soups and sauces.

Borage.

The common borage is often taken as the type of Borragineæ, the Borage family, a natural order of Dicotyledo-

nous plants, containing about thirty genera, and nearly three hundred species. This herb represents not only the peculiarities of structure, but sensible properties of this order: all the known species have an insipid juice, and their surface is covered with stiff, white hairs, which impart a peculiar roughness or asperity to the skin, on which account these plants were formerly called *asperifoliæ*, or rough-leaved.

Borage is said to be derived from the Latin words, *cor* and *ago*, because the old herbalists used it "to comfort the *heart* and spirits of those that are in a consumption or troubled with often swoonings, or passions of the *heart*." The ancient Romans called it *Buglossus*, from the Greek Βουγλωσσος, because the leaf is like the tongue of an ox. The French call it *langue de bœuf*, and the name Bugloss is not uncommon in England. *Euphrosynon* is also an ancient name for it, because when put into a cup of wine it was said to make those who drank of it merry,—an effect which we should be disposed to attribute rather to the wine than the borage.

Borage is said to have been introduced into England from Aleppo, but it grows so freely in this country that many writers suppose it to be indigenous. The herb is succulent and mucilaginous, and when bruised yields a very faint odour. Exhilarating qualities were formerly attaibuted to it, and it was reckoned one of the four cordial flowers, the other three being alkanet, roses, and violets. It has been recommended as a medicine of great efficacy in pleurisy and inflammatory fever, and as such is sometimes used in France in the form of a syrup prepared from the leaves. The juice of borage yields nitre, and on this account perhaps its medicinal virtues are considered salutary. Water distilled from both the leaves and flowers of the plant was formerly a favourite medicine, but is very little regarded in modern practice. Gerard says that many things can be made from borage, "and be used everywhere for the comfort of the heart, for the driving away of sorrowe and increasing the joie of the mind. Sirrupe made of the flowers comforteth the heart, purgeth melancholie, quieteth the phrenticke or lunaticke person. The leaves eaten raw do engender goode bloode, and when boiled in honey and water they cure hoarseness."

Lord Bacon observes that—

The leaf of the borage hath an excellent spirit to repress the fuliginous vapour of dusky melancholy, and so to cure madness: but nevertheless, if the leaf be infused long it yieldeth forth but a raw substance, of no virtue; but if the borage stay a small time, and be often changed with fresh, it will make a sovereign drink for melancholy passions.

There is an old Latin verse on this plant—

Ego borago gaudia semper ago—

which has been thus paraphrased:—

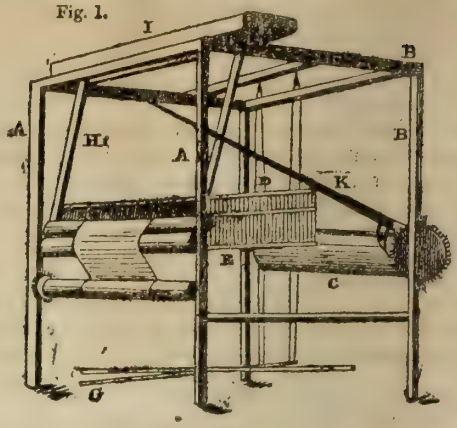
I, Borage, bring courage.

This herb is now almost entirely neglected in England, although it is sometimes used with wine, water, lemon, and sugar as an ingredient in the favourite old English drink called "cool tankard." The plant has an odour like cucumber, and, in consequence of the nitre contained in it, communicates a peculiar coolness and flavour to any beverage in which it is steeped.

He who from out the dull dark earth
Can bid the red rose take its birth,
And from the blind unopened mine
Call forth the gem to live and shine,
He, by some powerful, heavenly law,
Will from our dark condition draw
Enjoyment endless, lovely light,
And give us courage for the fight,
Give strength through every ill to spring,
And hope, which conquers everything.—!

WIRE-GAUZE.

Fig. 1.



In our recent papers on Wire-drawing we briefly explained the mode in which a bar of iron or other metal is gradually reduced in diameter, till the form of wire is produced. We now proceed to show how wire, thus produced, may be made into a net, a cloth, a gauze, or extended material consisting of meshes.

This kind of manufacture assumes one of two forms, according to circumstances. If a fence, grating, or net be required, in which the meshes are as much as an inch in diameter, or are otherwise than rectangular in shape, the wire is twisted or plaited into the required form by hand; but if the meshes are smaller in size, the process is effected by means of a loom, in many respects resembling the cloth-weaver's hand-loom.

In the annexed cut (fig. 1,) ABBA represents the frame of the loom, by which all the parts are held together, and which is generally about five feet high, four feet deep, and three wide, but occasionally much larger. C is a beam or wooden roller, on the surface of which has been turned a number of deep grooves, into which the wires to form the "warp" are wound, each groove receiving a greater or less number of wires, according to the required fineness of the wire-cloth or gauze. These wires pass through vertical openings in a kind of frame-work, D E, and then pass over a roller in front of the frame. As the cloth becomes woven it is wound on another roller situated beneath the one just referred to. The apparatus at D E consists of two sets, or four frames of vertical wires, each about as thick as a common knitting-pin, and in the middle of each of these wires a small hole is punched, through which one wire of the warp is passed. Thus each wire of the warp has a separate perforation appropriated to itself. These frames are suspended, two and two together, by cords passing over the top of the loom, or else round pulleys fixed to an upper beam. F G are two treadles, by which the weaver draws down the frames alternately, during the process of weaving.

The warp-wires being thus arranged in a parallel horizontal layer from the beam to the front roller, it is evident that, by pressing down the treadles alternately, the warp-wires in the loop-holes of the frames D E will be alternately elevated and depressed, so as to form a passage, under some of the wires and above others, for a shuttle containing a bobbin of wire. As the shuttle passes in this way across the warp, it leaves one thread of "weft" behind it, which is immediately driven up close to the weft-thread immediately preceding it, by an instrument called the *reed*, which swings on the lower part of the lever H. The warp-wires being reversed in position by the action of the treadles, the layer, row, or set of wires, which was before elevated, is now depressed, and the depressed wires elevated, and another weft-thread is similarly thrown across is the shuttle, and driven up by means of the reed.

The instrument last spoken of, *i.e.* the reed, is com-

posed of small bars of steel wire, set as close as possible, so as only just to admit the warp-wires between them, and the swing-frame H, to which it is attached, is balanced and aided in its oscillations by a heavy movable piece of timber I, resting on pivots on the upper part of the frame.

As the work advances the woven cloth is wound on the lower front roller or beam by moving the beam C round a little, by means of a ratchet wheel at one end, and the connecting lever K. Thus the weaving proceeds, thread after thread of weft being thrown across the warp, the two sets of warp-wires being alternately elevated and depressed.

The shuttles are of two kinds, according to the thickness of the wire employed. In general, the form is that represented at A in the annexed cut (fig. 2,) differing

Fig. 2.

but little from the linen-weaver's shuttle, as formerly used. It is a kind of thick blunt needle, similar at both ends, and made of box-wood. It is about six inches in length, and has an aperture in the middle for the insertion of a bobbin or pirn. This bobbin is a little cylinder rotating on its axis by means of pivots at the ends, and the wire being wound on the bobbin, the rotation causes it to be given off as wanted by the weaver. When the wire is very thick it does not leave the bobbin with sufficient ease and celerity, and in that case it is wound on a kind of notched stick, represented at n, and then driven across the warp-threads.

Power-loom weaving has been applied to wire-cloth, as well as to fibrous materials, such as linen, cotton, and woollen, but the demand is not sufficiently extensive to render this application of steam power of high importance.

The reader will readily call to mind the many purposes for which twisted wire is applied, under the general name of "wire-work." Of those kinds which are woven, the coarser specimens are used for fences, pheasantries, lanterns, &c., and the finer for flour-dressing machines, paper-mill washers, fine sieves, meat-safes, dish-covers, window-blinds, and a variety of other purposes.

When the meshes are very minute, the fabric is termed *wire gauze*,—a substance which has become interesting since the curious discovery of Sir H. Davy, that such gauze is incapable of permitting the passage of flame.

The experiment may be performed with a piece of wire-gauze, about nine inches square, and of such fineness as to contain about thirty meshes in the square inch. If we bring the gauze gradually down upon the flame of a candle, or of a spirit-lamp, an appearance will be presented as shown in fig. 3. The flame does not pass through the gauze, but only the hot inflammable vapour of the flame, which may be ignited at the upper surface, as shown in fig. 4.

If two pieces of paper be attached, one to each surface of the gauze, and flame be applied below, the under piece will of course be consumed; but the upper piece will remain uninjured by the flame, so long as the wire-gauze remains below red-heat. If, instead of paper, we place camphor on the upper surface of the gauze, the camphor will not take fire there; but having melted, will pass through the gauze, and burn on the under surface only. If gunpowder be sprinkled on the gauze, it will not ignite until the wire is hot enough for the purpose, When Lycopodium is projected on flame it instantly breaks out into a blaze; but if this substance be projected on the wire-gauze, it merely blackens, and does not take fire at all.

We see, then, from these experiments, that wire-gauze is a barrier to the progress of combustion, and that it intercepts heat as well as flame. If we place a piece of cotton-stuff upon the gauze, and bring the latter down upon a flame, the cotton will remain uninjured until the wire gets red-hot:—the flame will then pass through and consume the stuff. We see then that wire-gauze ceases to intercept flame as soon as by increase of temperature it ceases to intercept heat.

Fig. 3.

Fig. 4.

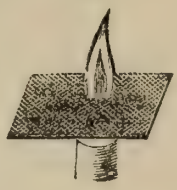
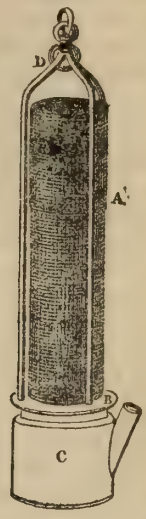


Fig. 5.



Now since the wire-gauze is formed of a good conducting substance, so much heat is abstracted from the flame, that the vapour which passes through the meshes is not hot enough to appear as flame; but when the gauze is red-hot, sufficient heat passes through to kindle the vapour, and then the flame is both below and above the gauze; in which case the latter only bisects the flame as in fig. 4.

The remarkable property of wire-gauze, was applied by Sir H. Davy to the construction of the miner's safety lamp. Coal-mines are frequently infested with an inflammable compound of hydrogen and carbon called carburetted hydrogen, or by the miners, *fire-damp*. This gas by mingling with the atmospheric air becomes explosive; so that the means whereby the miner dispelled the darkness of his gloomy workshop often produced his destruction. To remedy the frequent disasters thus occasioned, Sir H. Davy invented a lamp, the flame of which is entirely surrounded by a hollow cylinder of wire-gauze A, (fig 5,) with a double top, carefully fastened, by doubling over, to the brass rim B, which screws on to the lamp C. The whole is protected and rendered portable by the frame and ring D. It is obvious that the flame of the lamp cannot penetrate from within to the surrounding medium, in consequence of the cooling power of the metallic tissue.

Another humane application of wire-gauze was made by the Chevalier Aldini, who applied this substance, together with other badly conducting materials, as a protection against fire. The incombustible parts of dress for covering the body, arms, and legs, he formed out of strong cloth, previously steeped in an alum solution; and the parts intended for the head were made of asbestos. The head-dress was a large cap entirely covering the head down to the neck, with proper apertures for the eyes, nostrils, and mouth. To this dress was superadded a wire-gauze dress consisting of a cap, a cuirass, a covering for the body and thighs; a pair of boots of double wire-gauze, and a shield.

Numerous experiments were made to show the efficacy of these defences in resisting flame. Among many others we may mention those exhibited to a committee of the Academy of Sciences at Paris. Two parallel rows of straw and brushwood, supported by iron frames, were placed three feet apart and extended thirty feet in length

When this mass was ignited, the spectators were obliged to move to a distance of nine or ten yards to avoid the heat. The flames appeared to fill up the whole space between the rows, and rose to the height of about ten feet. When the flames were most fierce, six firemen, clad in the incombustible dresses, marched many times at a slow pace along the fiery passage. One of the men carried behind him a child eight years old in a wicker basket covered with metallic gauze.

A still more striking exhibition was made in 1829 in the yard of the barracks of Saint Gervais. Two towers were erected, each two stories high, and were surrounded with faggots and straw, and ignited. The firemen entered the towers with impunity, and one of them with his child in the wire-gauze basket rushed into the flames which were raging to the height of eight yards. This violent combustion, accompanied by a thick black smoke, hid him from the view of the spectators, and he remained so long invisible that serious apprehensions were felt for his safety; but he at length appeared, uninjured, and exulting in having braved the terrors of this fiery gulf.

It is remarkable that, in these trials, the firemen were able to breathe in the midst of the flames without difficulty. This effect arises from the circumstance that much of the heat is intercepted by the wire-gauze in the passage of the heated air to the lungs; and also from the remarkable power of the human body to resist great heat, and of the lungs to breathe very hot air.

LIKE some vast flood, unbounded, fierce, and strong,
His nature leads ungoverned man along,
Like mighty bulwarks made to stem that tide,
The laws are formed, and placed on every side;
Whene'er it breaks the bonds by these decreed,
New statutes rise, and stronger laws succeed;
More and more gentle grows the dying stream,
More and more strong the rising bulwarks seem;
Till, like a miner working sure and slow,
Luxury creeps on, and ruins all below!
The basis sinks, the ample piles decay,
The stately fabric shakes and falls away;
Primeval want and ignorance come on,
But Freedom, that exalts the savage state, is gone.—
CRABBE.

PRINTING was invented by a soldier, gunpowder by a monk, and several branches of the clothing trade by a bishop; this last is said, however, agreeably to the vulgar notions concerning Bishop Blaze, the patron saint of the woolcombers. But he obtained that honour, not on account of any improvements he made in the trade, but because he suffered martyrdom by having his flesh torn by carding irons.

MELANCHOLY.—Of the melancholy of common life there are two species that have but little resemblance. There is a sullen gloom which disposes to unkindness and every bad passion; a fretfulness in all the daily and hourly intercourse of familiar life, which, if it weary at last the assiduities of friendship, sees only the neglect which has forced and not the perversity of humour which gave occasion to it, and soon learns to hate, therefore, what it considers as ingratitude and injustice; or which, if friendship be still assiduous as before, sees in these very assiduities, a proof, not of the strength of that affection which has forgotten the acrimony to soothe the supposed uneasiness which gave it rise, but a proof that there has been no offensive acrimony to be forgotten, and persists therefore in every peevish caprice till the domestic tyranny becomes habitual. This melancholy temper, so poisonous to the happiness, not of the individual only, but of all those who are within the circle of its influence, and who feel their misery the more because it may perhaps arise from one whom they strive, and vainly strive to love, is the temper of a vulgar mind. But there is a melancholy of a gentler species, a melancholy which as it arises, in a great measure, from a view of the sufferings of man, disposes to a warmer love of man this sufferer, and which is almost as essential to the finer emotions of virtue as it is to the nicer sensibilities of poetic genius.—DR. THOMAS BROWN.

TRANSLATION OF SOME LINES WRITTEN IN LATIN BY LADY JANE GREY.

ENDLESS all malice if our God is nigh,
Fruitless all pains if He his help deny;
Patient I pass these gloomy hours away,
And wait the morning of eternal day.

IF ever any book was truly poetical,—if ever any abounded with poetry, it is *Paradise Lost*. What an expansion of facts from a small seed of history! What worlds are invented,—what embellishments of nature upon what our senses present us with! Divine things are more nobly, more divinely, represented to the imagination than by any other poem; a more beautiful idea is given of Nature than any poet has pretended to,—Nature—as just come out of the hand of God, in all its virgin loveliness, glory, and purity; and the human race is shown, not, as Homer's, more gigantic, more robust, more valiant, but without comparison more truly amiable, more so than by the pictures and statues of the greatest masters. And all these sublime ideas are conveyed to us in the most effectual and engaging manner. The mind of the reader is tempered and prepared by pleasure: it is drawn and allured, it is awakened and invigorated, to receive such impressions as the poet intended to give it. The poem opens the fountains of knowledge, piety, and virtue; and pours along full streams of peace, comfort, and joy, to such as can penetrate the true sense of the writer, and obediently listen to his song.—RICHARDSON.

CIRCLES are praised, not that abound
In largeness, but th' exactly round;
Such praise they merit, who excel,
Not in wide spheres, but acting well.—?

THE common imagination that we have of Paradise on the other side of death, is, that of a loftly aërial region, where the inmates float in ether, or are mysteriously suspended upon nothing—where all the warm and sensible accompaniments which give such an expression of strength, and life, and colouring, to our present habitation, are attenuated into a sort of spiritual element, that is meagre, and imperceptible, and utterly uninviting to the eye of mortals here below—where every vestige of materialism is done away, and nothing left but certain unearthly scenes that have no power of allurement, and certain unearthly ecstacies, with which it is felt impossible to sympathize. The holders of this imagination forget all the while that really there is no essential connexion between materialism and sin—that the world which we now inhabit, had all the amplitude and solidity of its present materialism before sin entered into it—that God so far, on that account, from looking slightly upon it, after it had received the last touch of his creating hand, reviewed the earth, and the waters, and the firmament, and all the green herbage, with the living creatures, and the man whom He had raised in dominion over them, and He saw everything that He had made, and, behold, it was all very good. They forget that on the birth of materialism, when it stood out in the freshness of those glories which the great Architect of Nature had impressed upon it, that then "the morning stars sung together, and all the sons of God shouted for joy." They forgot the appeals that are made everywhere in the Bible to this material workmanship—and how, from the face of these visible heavens, and the garniture of this earth that we tread upon, the greatness and the goodness of God are reflected on the view of his worshippers. No, my brethren, the object of the administration we sit under, is to extirpate sin, but it is not to sweep away materialism. By the convulsions of the last day, it may be shaken, and broken down from its present arrangements; and thrown into such fitful agitations, as that the whole of its existing framework shall fall to pieces; and with a heat so fervent as to melt its most solid elements, may it be utterly dissolved. And thus may the earth again become without form and void, but without one particle of its substance going into annihilation. Out of the ruins of this second chaos, may another heaven and another earth be made to arise; and a new materialism, with other aspects of magnificence and beauty, emerge from the wreck of this mighty transformation; and the world be peopled as before, with the varieties of material loveliness, and space be again lighted up into a firmament of material splendour.—DR. CHALMERS.

RURAL SPORTS FOR THE MONTHS.

AUGUST.

Now westlin winds, and slaught'ring guns
Bring autumn's pleasant weather;
The moorcock springs, on whirring wings,
Amang the blooming heather.

The sport which is eagerly anticipated and vigorously pursued by our northern neighbours at this season of the year is grouse shooting. On the extensive moors and dry central mountains of Scotland red grouse especially abound, finding cover and protection from their enemies in the wide-spread carpet of heather, and being concealed from observation by their similarity of colour with that of their place of shelter. The Heath, which is so common in the northern parts of the kingdom that our moors and mountain sides are completely empurpled with its blossoms, is a most valuable plant, and admirably adapted for the situations in which it is found. Multitudes of birds find sustenance in the tender buds and numerous seeds; while to the poor this plant affords a convenient substitute for more expensive fuel. On the slopes and flats where the heath is of considerable length, the red grouse is sure to be abundant, but so difficult is it to raise them from their cover when the season has been unfavourable, and they are not in good feather, that we are told that "one who has little knowledge of the moors may wander for days, in the places where they are most abundant, and not see a single bird."

Scotland is undoubtedly superior to every other part of Great Britain for the breeding and rearing of grouse, yet there are other localities where they are, or have been found. Black grouse were formerly common in the New Forest in Hampshire, and in some parts of Derbyshire, Devonshire, and Staffordshire, but red grouse were more rarely found, and are probably not to be met with in any one of those counties at the present time. The heights and moors of England, especially of the southern parts, are deficient in cover and in food, and are not therefore adapted for the protection of these birds. In Yorkshire they are to be met with in tolerable abundance, but the ravages of the lead miners have greatly lessened their numbers. These men act in concert, and are not easily hindered or restrained from their pursuit. According to Mr. Blaine they go from ten to twenty in a body, marching in a line from forty to sixty yards' distance from each other, and as they are excellent walkers, and usually expert shooters, they destroy a vast number of birds, especially as they generally begin their maraudings before the legal time. They also take other advantages, for certain houses of call are ready to receive the birds and to dispatch them by coach to London, or by horse-loads to the large provincial towns or watering-places on the coast. The system of plunder is therefore complete; and the sporting, as it regards grouse, is in a great measure annihilated.

English grouse shooters usually proceed towards the northern counties from Staffordshire to the Tweed, or from Whitby to Whitehaven, but the poaching propensities of the miners, as above noticed, have left some districts, once abounding in game, now nearly destitute of it. Among the most esteemed localities for this sport we may mention Kirby Lonsdale, Brough, Bowes, Sedbergh, Kirkby Stephen, and the old Spittal. Leaving our readers to seek for information concerning these places in professedly sporting publications, we proceed to notice the grouse shooting of Ireland and Scotland.

The numbers of grouse in Ireland are few when compared with those of England and Scotland. A sportsman tells us that he saw more of them on the mountains about Langholm in Scotland in one day, than he ever saw in Ireland in twenty, although he has visited the best preserved mountains of the latter country. These are on the south side of the great Galty Mountains, near Michells' Town in the counties of Cork, Limerick, and Tipperary, and are considered to be the best for grousing in Ireland. Enveloped by these mountains is a tract of country belonging to the Earl of Kingston, celebrated among others for the abundance of different kinds of game to be found on it, and especially of grouse. The Kerry, Wicklow, Clogheen, Nenagh, and all the north country mountains, are likewise said to have plenty of grouse on them, and to be in general well-preserved.

In the Highlands of Scotland grouse shooting is so eagerly followed, that the lairds are enabled to exact considerable sums from sportsmen by way of rent for their shooting quarters during the season. The distance, and the expenses connected with a journey to the Highlands do not deter a considerable number of persons from undertaking it, for the shooting of red grouse is one of the highest marks of the sportsman's ambition. This sport commences by law on the 12th of August, some days before the shooting of black grouse, and in setting out to the moors, the grouser is careful to provide himself well with all the requisite materials, since the distance of the shooting locality from places where he can be re-supplied is generally great. The safest plan therefore to prevent disappointment is to take duplicates of all the materials. "We rented some grousing grounds," says Blaine, "near Brough in Westmoreland, the ascents to some of which were so precipitous, that we could only make our way up the gullies and water-courses for more than three miles to our point. As we were too enthusiastic in the sport, particularly in the first part of the season, not to be every-day engaged in it, we employed a mule in carrying us up to our ground; and the same plan we would strongly recommend to other sportsmen thus situated; for mules, it is well known, are hardy and remarkably safe."

The heavy mist so frequent in mountainous regions is a great drawback to this sport, it is also of little avail to beat the moors in the heat of the day, so that success in grousing may be considered very precarious. Perhaps it is mainly owing to the risk and uncertainty connected with the sport, that it is so highly esteemed and zealously practised.

The red grouse is exclusively confined to the British Islands, and has never been found on any part of the Continent. It is fifteen inches long, and weighs about nineteen ounces, being a little larger than the ptarmigan, though the difference, except in the length of the wings, is inconsiderable. The bill is black; the eyes hazel; the nostrils shaded with small red and black feathers; at the base of the lower bill there is a white spot on each side; the throat is red; each eye is arched with a large naked spot; the body is beautifully mottled with deep red and black, which gives it the appearance of tortoise-shell; the breast and belly are of a purplish hue, crossed with small dusky lines; the tail consists of sixteen feathers of equal lengths, the four middlemost barred with red, the others black; the quills are dusky; the legs are clothed with soft white feathers down to the claws, which are strong, and of a light colour. The female is somewhat less: the naked skin above each eye is not so conspicuous, and the colours of its plumage, in general, much lighter than those of the male.

The red grouse (*Tetrao Scoticus*) belongs to a subgenus of the order *Gallinidæ*. It appears to have been unknown to Linnæus, while Gmelin regarded it as a variety of the ptarmigan. The food of this bird consists of mountain and bog-berries, and the young shoots of heath. It has been remarked that in cultivated districts, a great change has taken place in the habits of the grouse, and instead of seeking a precarious subsistence on the moors during severe weather, they migrate towards the lower grounds, where hundreds crowd to the corn-sheaves; and as the grain there remains out a considerable portion of the winter, so they escape starvation even in the worst seasons. The female lays from five to ten eggs early in the spring, in

a rude nest on the ground, and is remarkable for care and attention to her young. She resolutely fights their battles against the birds of prey and the vermin that attack them, nor is the male bird neglectful of his offspring. In order to secure the flight of the *cheepers*, (as young grouse are called,) both parents will practise such manœuvres as may best divert the shooter's attention, so that we find a sportsman saying:—"The very self-devotion which makes the parents so ready a mark, by the lingering flight they make, in order to secure the retreat of their brood, should plead for them, especially when the cheepers are now almost arrived at maturity, and consequently are fit prey for the shooter."

Several instances are recorded of the grouse being reared in a domesticated state. A gentleman, residing at Green Mount, Tipperary, Ireland, is said to have kept two brace of grouse for several years, which were so tame that it was a common practice with their owner to bring the birds and his setters into the parlour together, and divert himself with seeing the dogs set: the birds did not pay the smallest attention to the dogs, or indicate the least wish to escape.

In concluding our notice of the sport for which the present month is distinguished we take the opportunity of expressing our regret that any reader of the *Saturday Magazine* should disapprove of the publication of our accounts of rural sports, on the ground that some of the incidents are calculated to justify and encourage cruel and unfeeling pursuits. The description of the several sports practised throughout our country is a mere description of *facts*, employed in this instance as a vehicle for conveying information respecting the animals pursued, and the localities which they inhabit. This was distinctly stated in our opening remarks, (to which we beg to refer our readers, Vol. XVIII., p. 38,) and we are not conscious of having departed from the plan originally laid down. In the description of the angler's sport, we have used the term "fascinating," in a way which, though it has excited the objections of a correspondent, we know to be strictly true. The artist and the admirer of nature have expatiated with delight on the scenes which in their days of angling they were led to explore, and which, but for that amusement, they might never have beheld. We perfectly agree with our correspondent, in his remark that such advantages as these may be attained by other and more rational means. In the article in question, while we have given the opinion of the honest Izaak Walton, to show what a person of mild and amiable disposition can say in defence of this sport, we have also given the satirical remarks of Sir Walter Scott, directed at such as would endeavour to prove that fishes are possessed of a very low degree of sensibility to pain.

For ourselves, we see but immaterial shades of difference, as far as it regards *cruelty*, in the several sports which have for their object the extinction of animal life, and we can therefore fully adopt the language of our favourite poet, when he says with respect to animals:—

> . . . . . If man's convenience, health,
> Or safety interfere, his rights and claims
> Are paramount, and must extinguish theirs.
> Else they are all—the meanest things that are,—
> As free to live, and to enjoy that life,
> As God was free to form them at the first,
> Who in His sovereign wisdom made them all.
>
> COWPER.

> TRUE, 'twas of old by God decreed
> That birds for man's support may bleed,
> His words to Noah: not so plain
> The license which those words contain,
> Nor know I well what records hold
> The license, in what court enrolled,
> To cut their lives for *pastime* short,
> Or of their sufferings make our *sport*.
> But most accordant to his word
> I deem it, that the needful bird
> Or beast should fall by those who smite
> For business, rather than delight.
> And surely most it bears the sign
> And likeness of the stamp divine;
> And sure 'tis most from semblance free
> And blame of wanton cruelty;
> And most accordant to the part
> Which suits the meek and feeling heart;
> Whom duty leads not on, that they
> Should turn from deeds of blood away,
> Nor on their victims' sufferings pore,
> Nor bathe unbid their hands in gore.
> HIM, who is merciful and kind
> To all his works, the thoughtful mind
> Most seeks by kindness to express:
> And "gentle heart loves gentleness*."
>
> MANT'S *British Months*.

RED GROUSE. *Tetrao Scoticus.*

* Chaucer.

I CAN conceive no office more noble than that of a Christian minister. The triumphs of successful legislation may adorn the statesmen—the laurels of conquest may wreathe proudly round the brow of the victor—but the Christian minister may boast of acquisitions more important than the one and more permanent than the other. He may be buried in an obscure and impoverished parish—his circle may be narrow—his enjoyments few—his relaxations sparing—but his name will be precious to those whom he has comforted in affliction, soothed in suffering, and cheered in death.—Nor is this all;—his memory will ever be a ffectionately cherished by those who reverence in him the instrument of their eternal salvation.—ANONYMOUS.

BOOKS are the legacies that genius leaves to mankind, to be delivered down from generation to generation, as presents to the posterity of those who are yet unborn.—ADDISON.

ROUGH uncultivated ground, dismal to the eye, inspires peevishness and discontent: may not this be one cause of the harsh manners of savages?

A field richly ornamented, containing beautiful objects of various kinds, displays in full lustre the goodness of the Deity, and the ample provision He has made for our happiness. Ought not the spectator to be filled with gratitude to his Maker, and with benevolence to his fellow-creatures? Other fine arts may be perverted to excite irregular, and even vicious, emotions; but gardening, which inspires the purest and most refined pleasures, cannot fail to promote every good affection. The gaiety and harmony of mind it produces, inclining the spectator to communicate his satisfaction to others, and to make them happy as he is himself, tend naturally to establish in him a habit of humanity and benevolence.—LORD KAIMES.

LONDON:
JOHN WILLIAM PARKER, WEST STRAND.
PUBLISHED IN WEEKLY NUMBERS, PRICE ONE PENNY, AND IN MONTHLY PARTS, PRICE SIXPENCE.
Sold by all Booksellers and Newsvenders in the Kingdom.

THE

Saturday Magazine.

No. 587. AUGUST 28TH, 1841. Price One Penny.

TURKEY AND THE TURKISH PROVINCES.

RUINED CARAVANSERAI AT HAFSA.

BULGARIA AND THE BULGARIANS.

Bulgaria, a province of European Turkey, owes its origin, like many other nations or tribes in the eastern parts of Europe, to an immigration of Tartar hordes, from the countries near the Caspian. There was a country called Great Bulgaria, on the confines of Asia and Europe, whose inhabitants penetrated to the west of the Black Sea, about the sixth century of the Christian era. They were repelled by the celebrated Belisarius: but in the following century they succeeded in forming a kingdom, which they called Little Bulgaria, along the southern shores of the Danube, in the heart of what is now European Turkey. The victories of Justinian the Second, Emperor of Constantinople, kept the Bulgarians in awe for a time; but they gradually extended their power at the expense of the Greek Empire, till, in the tenth century, they became masters of Dardania, Thessaly, and Epirus, under Simeon, the most celebrated of all their kings. Bulgaria was subsequently again united to the empire as a tributary state, and so continued for two centuries; but, in the thirteenth, it recovered its independence, and maintained a continual struggle with its more powerful neighbours; till it was at length reduced to a Turkish province by Bajazet, in 1396. As a Turkish province it has ever since remained.

Bulgaria is bounded in a more definite manner than most of the Turkish provinces. Its northern limit is the Danube, which separates it from Wallachia; the eastern boundary is the Black Sea; the southern is the mountains of the Balkan; and the western is formed principally by two small rivers. Placed, as it were, on the declivity of the Balkan, nearly the whole province is rugged and mountainous. Few countries owe more to the liberal hand of nature than Bulgaria. The soil is everywhere productive, and the numerous streams fertilize the fields which they traverse; while the beauty of the climate in summer, tempered by a considerable degree of cold in winter, contributes materially to the rapid increase of every kind of produce. All sorts of grain, cattle, horses, wool, iron, and wine, are raised in abundance, and would render this a highly flourishing country under a more liberal government than that of the Turks; for the Danube affords an easy communication with the neighbouring provinces and the Mediterranean, by means of the Black Sea. Bulgaria is considered by the Turks as the granary of Constantinople, so that the exportation of corn to any other place is strictly prohibited. Wheat, barley, and millet are raised in large quantities; and at one part of the province are large rice farms belonging to the Sultan, from the produce of which, many of the officers receive their salaries in kind. Honey, of excellent quality, is produced in great abundance, but the exportation is prohibited, on the same ground as that of corn, viz., in order to secure a plentiful supply to the capital.

The Rev. Mr. Walsh gives a favourable picture of the peasantry of this province. Although it forms part of Turkey, yet the inhabitants, like those of Moldavia and Wallachia, are Greek Christians, and have little of the Turkish character. The Turks who reside there are chiefly officials, or, at least, persons who deem them-

selves superior to the native inhabitants of the province. Mr. Walsh draws a striking contrast between the Bulgarians, who are simple, kind, and affectionate; and the Turks residing among them, who were rude and often brutal in their conduct.

On the road, (he says,) we frequently met groups of both, always separate, but employed in the same avocations; the Turks were known by turbans, sashes, pistols, and yatigans; but still more by a ferocity of aspect, a rude assumption of demeanour, and a careless kind of contempt, that at once repulsed and disgusted us. They never turned their buffaloes or arubas out of the way to let us pass, or showed the smallest wish to be civil and obliging; on the contrary, they were pleased if they pushed us into a bog in the narrow road, or entangled us among trees and bushes. Any accommodation in houses was out of the question; if we approached one for a drink of milk or water, we ran the hazard of being stabbed or shot.

The Bulgarian peasants are distinguished by caps of brown sheep-skin; jackets of cloth, made of the undyed wool of dark brown sheep, which their wives spin and weave; white cloth trousers, and sandals of raw leather, drawn under the sole, and laced with strings over the instep. They carry neither pistol, yatigan, nor any other weapon of offence. The dress of the females is described as being neat, clean, and comfortable. It generally consists of a jacket and petticoat of dark blue cloth, with a bright border of list round the edges or down the seams; and an under-garment of hemp and cotton, very large, hanging far below the petticoat, and gathered in full folds round the neck and arms, and worked or woven with lace-like borders. Married women wear handkerchiefs on their heads, with a long lappel hanging down the back behind; girls have their heads uncovered, with their hair braided and ornamented with different coins. All wear ear-rings, bracelets, and finger-rings, from an early age; and nearly all go barefooted.

Those who are accustomed to read books of travels, cannot fail to remark—at first with surprise, and afterwards, perhaps, with a smile—the very discordant results at which authors arrive respecting the manners, character, and industry of the people with whom they come in contact in their travels. The truth is, that, in most cases, these writers, however desirous they may be to adhere to the truth, have seldom opportunities to sift the matters on which they offer opinions. One traveller may pass through a country in the bleak season of winter, and his account of it will be tinctured with the cheerlessness which he observes; whereas another, who happened to travel there in a more genial season, will speak in glowing language of the country. Again, if a traveller happens to meet with kind usage from those with whom he has communication, he is apt to jump to the conclusion that the inhabitants, as a nation, are kind; while an opposite treatment will lead to an opposite result. We mention these circumstances, because we have found that the Bulgarians, their character, manners, and dwellings, are represented in different lights by different travellers; and we have wished to point out the probable cause for these discrepancies. The traveller from whom we just took an extract, says, that the countenances of the peasantry are so open, artless, and benevolent, and their demeanour so kind and cordial, that every one he met seemed to welcome him as a friend. Whenever their buffaloes or arubas stopped up the way, the peasants were prompt to turn them aside; and whenever they saw him embarrassed, or obliged to get out of the road, they were eager to show that it was not their fault. Their houses were always open to him, and his presence was a kind of jubilee to the family; and the compensation he gave for their hospitality was so small, and their mode of receiving it so disinterested, as to induce him to believe that if none had been offered, none would have been asked for.—Another traveller, who passed through this province in the winter season, when all was discomfort, has scarcely a word to say in favour either of the people or the country. We believe, however, that, in this instance, those who speak in rather favourable terms approach nearer to the truth.

A brief notice of Mr. Tietz's journey from the northern to the southern boundaries of the province will enable us to describe some of its features. The party, consisting of two gentlemen, two servants, a Tatâr or armed courier, and two postilions, were mounted on seven horses; while four horses carried the luggage; all the horses being hired, for a certain agreed sum, to carry the traveller and luggage from Rustchuk on the banks of the Danube, to Constantinople. The travellers left Rustchuk in the winter season, and travelled along a road which is deemed one of the best in the Turkish empire. Arriving at a river over which there was no bridge, the travellers had to swim their horses across; and as the water was partially covered with ice, the fording was anything but agreeable. However, after a good hour's ride they arrived at a village inhabited by Bulgarian Christians, entered a peasant's dwelling, and thouroughly dried themselves upon mats and carpets. Meanwhile the Tatâr, who was a Turk, prepared a meal in the Turkish manner; consisting of a roasted fowl, a dish of pilau, which consists of dried rice cooked in a little fat,—a dish of kibabs, consisting of small pieces of mutton, stuck on a wooden skewer, and roasted,—and finally cheese-cakes, to which succeeded a dessert of figs, dates, and grapes. The place of a table was supplied by a low footstool turned upside down, on the four inverted legs of which was placed a round wooden dish, for the reception of the food. The cottage—as appears to be generally the case in Bulgaria—was inhabited by a whole family, and the travellers sat comfortably round a blazing fire, conversing with the host; while the young men were smoking, and the women and girls were spinning cotton and wool. The Turks know the value of the Bulgarians as an industrious people, and seem, on the whole, to treat them more mildly than most others of their Christian subjects.

The travellers proceeded at a quick rate through a country sparingly supplied with towns and villages; meeting on their way with many fountains, founded in most cases by the pious endowment of individuals, for the refreshment of travellers who would else suffer from the little accommodation afforded in the way of inns or khans. Much taste is usually displayed in selecting an agreeable spot, shaded by trees, close to the road side, as the site of these springs; an iron or earthenware vessel is often found in a small niche built over the spouting tube; and around it are a few large stones, serving as seats. A well-kept, and gradually-ascending road conducted the travellers through a few villages to the foot of the Balkan mountains, which separate Bulgaria from Roumelia. The northern or Bulgarian side of these mountains is cooler than the southern, and is covered with large forests, consisting of fir, beech, and oak trees. The entrance to the pass of the Balkan is very romantic. On the left, close to the road, and surrounded by cypresses and plantains, is an elegant fountain; on the right, at the distance of about a mile, a pleasant village nestles in a hollow, at the foot of the mountain. The travellers passed over a bridge, beneath which a loud rushing stream descended from the heights; and then rode through a narrow ravine, bordered on either side by precipitous and almost overhanging rocks, and occasionally shaded by large oak trees. After ascending for four hours, they arrived at the small town of Tirnowa, which is deemed the metropolis of Bulgaria. We may here remark, that Bulgaria contains very few important towns; the inhabitants being rather of a pastoral character, living in villages more than in towns.

The travellers left Tirnowa, and ascended by a path contiguous to fearful abysses, and full of loose stones;

it was so narrow, that the horses were obliged to follow one another, in single file; and in many spots the sure-footed animals pass over fathomless chasms scarcely a foot wide. They at length reached a place where the road became exceedingly narrow, and made a bend round a sharp crag lying on the right, whilst on the left a very deep abyss yawned. The Tatâr drew a pistol from his belt, and fired twice; after which he explained to his employers the purpose of so doing. It appears that there is no possibility of two horses, especially if loaded, traversing this narrow path abreast: in case, therefore, of a caravan being on the point of entering the pass from the opposite direction, the pistol-shot is a signal that the path is already occupied, and that the advancing caravan must stop. After having passed this dangerous place, the travellers, came to the village of Gablowa, seated high in the mountains, close to a torrent interrupted by many falls; it was inhabited wholly by Bulgarian iron-smiths, the red flames of whose furnaces shone through almost every door, and the blows of whose hammers resounded from the surrounding mountains. As we have now reached the summit of the Balkan pass, the southern boundary of Bulgaria, we shall not follow the travellers any further in this direction.

Dr. Mc Michael, who travelled on horseback through Bulgaria from the Danube to the Balkan, nearly in the same manner as the travellers just alluded to, gives the following description of a village scene, shortly before arriving at the mountains :—

At midday we halted in the centre of a small village; and one of our *surugees* having placed himself on a little eminence set up a loud and piercing shout, which he maintained as long as his respiration would allow. No inhabitant had been visible as we entered the village; but after one or two repetitions of this extraordinary summons, an elderly peasant was seen making towards us with all possible speed, whom our conductor, on his approach, saluted with the dignified appellation of *Schorbatchie*, or captain, upbraiding him, however, at the same time, with delay He, it appeared, was the chief of the village, and on him devolved the duty of providing strangers with food and lodging: should the traveller be a Turk, these accommodations are harshly exacted, and, I believe, never requited; and though we always endeavoured at our departure to satisfy our hosts, yet, at this remuneration was uncertain, our arrival in a village was never greeted by any very smiling countenances. On this occasion the *Schorbatchie* conducted us to a hut, where we obtained our usual refreshment of bread, eggs and wine, of not an unpleasant taste, though very weak in its quality; these articles of food were to be procured in almost every village we passed through, and if it were a large one, the Turkish luxury of *yaourt* was generally to be found.

There are one or two Bulgarian towns near the Danube, such as Silistria and Rustchuk, which are worthy of notice; but as we have it in contemplation to describe the Danube and its banks, in a series of articles, we shall not dwell farther on the subject here.—Our frontispiece represents the partially decayed remains of one of those caravanserais which the traveller so frequently meets with in Turkey.

THERE is a tear, whose muteness speaks
More than all language can convey,—
A tear, by which the full heart seeks
Its warm emotions to pourtray;
'Tis the most precious gem, in sooth,
That can by virtue's eyes be viewed,
In the heart's mine of age or youth,—
It is the tear of gratitude.—?

BEWARE how you allow words to pass for more than they are worth, and bear in mind what alteration is sometimes produced in their current value by the course of time.—SOUTHEY.

No prince ever loved peace more than King Henry the Seventh of England. The usual preface to all his treaties was, "that when Christ came into the world peace was sung, and when He went out of the world peace was bequeathed."

ON CHESS. No. XVI.

THE AUTOMATON CHESS-PLAYER. 4.

DURING the exhibition of the Automaton Chess-Player in London under its new proprietor, M. Maelzel, the mysterious box, without which M. de Kempelen stated the automaton could not play, was no longer consulted. Maelzel held a lighted candle in the interior before playing, and then left the candle burning on an adjoining slab. The mode of exhibiting the interior of the chest, the winding up of the machinery, and some other minor circumstances, were carefully observed by several persons who endeavoured to prove the existence of a concealed confederate. None, however, were successful, until Mr. Willis, of Cambridge, a gentleman well known for his high scientific attainments, published his attempt to analyse the automaton chess-player. Taking advantage of just so much as was seen and heard at the exhibition, and with the assistance of numerous drawings, his reasonings amount to the following simple conclusion; that the man, who really played the chess automaton, was concealed in the chest.

We now proceed to lay before the reader an abstract of Mr. Willis's clever work.

At the commencement of the exhibition the spectators are shown the interior of the chest, which appears to be so occupied by pieces of machinery that the concealment of a human being seems impossible. When the movements of the automaton begin, the beholders, in the first moments of surprise, and in the absence of any ostensible living cause, naturally refer the effect to the mechanism which has been exhibited, because the movements immediately follow the familiar action and well-known sound of winding up clock-work, and are skilfully accompanied by the grating noise of moving wheels. But still there is no evidence that the concealed machinery exerts any influence on the arm of the automaton, or that the machinery is ever in motion at all. The machinery at rest is freely exposed: the chest is ostentatiously opened, and the semblance at least of wheels, and pulleys, and levers, is submitted to inspection without reserve; but when their reality should appear, and their connection with the automaton be made manifest, the doors are carefully closed and no further examination permitted. The glaring contradiction between the eager display on the one hand and studied concealment on the other can only be reconciled by considering the exhibition of the mechanism as a mere stratagem, calculated to distract the attention and mislead the judgment of the spectators. This opinion, too, receives further support from the undeviating mode of disclosing the interior of the chest: doors and drawers are opened in one uniform order, in which no variation had ever been observed. The mode, too, of winding up was sufficient to convince a skilful mechanist that the axis turned by the key was quite free and unconnected either with spring or weight, or any system of machinery.

In all machines requiring to be wound up two consequences are inseparable from their construction: the first is, that in winding up the machinery, the key is limited in the number of its revolutions; and the second is, that some relative proportion must be constantly maintained betwixt the winding up and the work performed, in order to enable the machine to continue its movements. Now these results are not observable in the chess-player; for the automaton will sometimes execute sixty-three moves with only one winding up; at other times the exhibitor has been observed to repeat the winding up after seven moves, and even after three moves; and once probably from inadvertence without the intervention of a single move; whilst, in every other instance, the key appeared to perform the same number of revolutions; evincing thereby that the revolving axis was unconnected with machinery, except, perhaps a ratchet wheel and click, or some similar apparatus, to enable it to produce the necessary sounds, and consequently that the key, like that of a child's watch, might be turned whenever the purposes of the exhibition seemed to require it.

We come now to examine the interior of the chest,

and, by the assistance of several diagrams, the reader will have no difficulty in understanding how a human being was concealed within the machine, although it was apparently thrown completely open to public inspection before the automaton commenced play. The letters of reference apply to all the figures as well in this as in the preceding articles.

It will be first remarked that the drawer G (figs. 5 and 6,) does not, when closed, extend to the back of the chest, but leaves behind it an open space O, which is never seen by the spectators. The smaller division of the chest, the front door of which is seen open at A, (figs. 3 and 7,) is divided into two parts by a screen I, (fig. 3, where the reader is supposed to look down upon the internal arrangements,) movable upon a hinge and so constructed that it closes upon the machinery H, the same instant the door B is closed: this machinery H occupies the front part, and the hinder part K is empty; but it communicates with the open space O behind the drawer. The back of the greater division of the chest is double, and the part P (fig. 6) moves on a joint at the upper part and forms, when raised, an opening S, (fig. 5,) between the two divisions of the chest, by carrying with it part of the partition B, which consists of cloth tightly stretched.

It will be seen that the body of the Turk is occupied by an inner trunk N, (figs. 5 and 6,) the interior of which is not exhibited. This trunk N communicates with the chest by an opening at T. Thus, by simply raising the false back, a connection is made between the two cupboards, the trunk N and the space O behind the drawer.

At U (fig. 4) is a sliding panel which is moved on one side; the chess-player is introduced before the company are admitted, and the panel moved into its place. The player raises the false back of the larger cupboard, and occupies the position represented in fig. 7, by the shaded figure. All is now ready for the exhibition: the door A of the smaller division of the chest is opened, and a quantity of machinery is seen in so crowded a state that nothing can be seen far beyond the opening, and the visitor concludes that the whole cupboard is filled with similar machinery, and he is confirmed in this conclusion when the opposite door B (fig. 3) is also opened, a candle held to it, and the light is seen to glimmer among the wheel-work. The door B is then locked, and the screen I falls into its place at the same instant. This door B is made to close by its own weight, but is also locked because the head of the chess-player is soon to be placed behind it; and the chess-automaton would cease to be a mystery should this door fly open in wheeling the machine about the room. No notice is taken of this door being locked, because the keys are wanted for other locks.

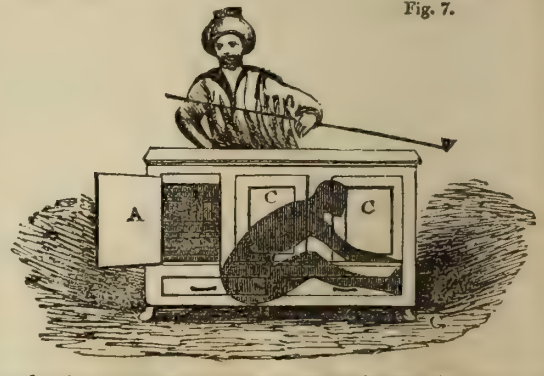
The door B being secured and the screen I closed, the exhibitor, leaving the door A open, proceeds to open other parts of the machine. The drawer G is next opened for the apparent purpose of showing the chess-men, cushion, and counters, contained in it; but the real object is to give the player time to shift his position from that shown in fig. 7 to that seen in figs. 7 and 9, and to replace the false back and partition preparatory to the opening of the great cupboard. It will be seen that the body of the living player is now in the small compartment between the screen I (fig. 3) and the door B, both of which are closed, while his legs are contained in the open space O behind the drawer G, and thus the door A can be left open with impunity. The great cupboard being opened, a glance of the eye is sufficient to show that no person is concealed in it: and to make this more sure a lighted candle is held at a door which opens at the back. The doors A C C being left open, the chest is wheeled round to show the trunk of the figure; the door D (fig. 3) is opened, and the bunch of keys allowed to remain in it, probably to remove any suspicion which may have arisen by locking the door B. The drapery of the figure is then raised. and two doors, one in the trunk and the other in the thigh, opened; the chest is then wheeled round into its original position and the door closed. Meanwhile the concealed player withdraws his legs from behind the drawer, which he can do the more readily while it is left open.

In all this routine the spectator imagines that he has inspected the whole of the interior of the machine, and feels convinced that the parts not exposed are full of machinery: whereas several parts have not been shown at all, and even when all the doors except B are open, about one half of the chest is quite excluded from the sight.

The drawer G being pushed in and the doors A C C closed, the exhibitor occupies some time in adjusting the machinery at the back; during which the player assumes the position shown in a front view in fig. 10, and in profile in fig. 11. In this position his head being above the chess-board he sees through the waistcoat of the figure as easily as through a veil, all the pieces on the chess-board, and he can readily take up and put down a piece by means of a string communicating with the fingers of the figure. His right hand being within the chest is employed to keep in motion the wheel-work for producing the noise heard during the moves and to perform any other movements of the figure*.

This solution by Mr. Willis, of the difficult problem of the chess-automaton is highly creditable to his sagacity, for, except in his extensive knowledge of mechanical science, he had no facilities of observation that did not belong to an ordinary spectator. We need not, therefore, be surprised that, when all the avenues to the interior of the chest were closed, Mr. Willis should fall into error respecting the mode by which the concealed player conducted the game; for, it must be obvious, that "the waistcoat of the figure" would afford a very inefficient concealment against the eyes and ears of numerous spectators, sharpened as they were by curiosity to the detection of the slightest motion or sound. But

Fig. 7.



An elevation of the front of the chest, showing the concealed player in his first position when the door A is opened.

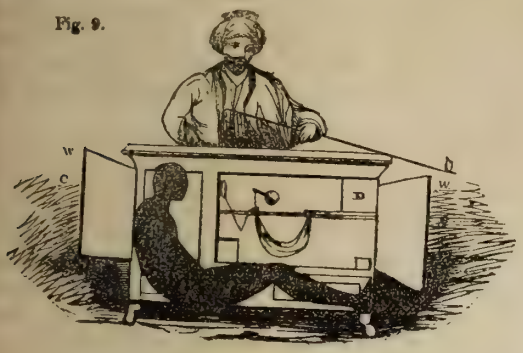
Fig. 8.

A side elevation, of the same, with the drawer open.

* The reader will not fail to notice a discrepancy between M. Winöisch's account of the mode of exhibiting the automaton and the mode actually adopted in London.

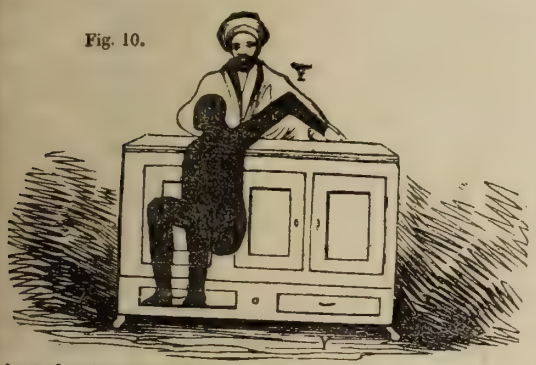
whatever is deficient in Mr. Willis's account has been subsequently supplied by M. Mouret, who, for a long time, constituted the source of vitality of the chess-automaton: this information, together with whatever else we may have to say on the subject, will appear in our next and concluding article.

Fig. 9.



A front elevation, showing the concealed player in his second position, when the door B is closed and A C C open.

Fig. 10.



A front elevation, showing the concealed player in his third position, or that in which he plays the game.

Fig. 11.

A side elevation of the same.

We are willing enough to keep at ever so great a distance from the faults, to which we have little or no inclination; and often affect to make our zeal in that respect remarkable; but then perhaps more favourite vices have easy entrance into our breasts, and take firm possession of them. We are shocked, for instance, and with much cause, at the monstrous and ruinous eagerness for pleasure, the profligate and unprecedented contempt of religion, that prevails in the world; our behaviour, on those heads, is unblameable, exemplary, and we value ourselves upon it beyond bounds. Yet possibly we indulge ourselves, all the while, to the full another way; are unjust and fraudulent, or selfish and unreasonable, or penurious and hard-hearted, or censorious and unforgiving, or peevish and ill-tempered; make every one about us uneasy, and those chiefly whose happiness ought to be our first care. This is applauding ourselves for being fortified, where the enemy is not likely to make an attack; and leaving the places that are most exposed, quite undefended. —Archbishop Secker.

THE BETEL-CHEWERS OF THE EAST.

Whether to blunt the edge of painful reflection, (remarks Mr. Marsden,) or owing to an aversion our natures have to total inaction, most nations have been addicted to the practice of enjoying by mastication, or otherwise, the flavour of substances possessing an inebriating quality. The South Americans chew the cocoa and mambee, and the Eastern people the *betel* and *areca*, (or, as they are called in the Malay language, *sirih* and *pinang*) much in the same way as tobacco is used in other parts of the world. All persons, without exception of age or sex, begin at an early age to accustom themselves to the use of betel, until it becomes an article of such necessity that many natives of the East would rather be deprived of their ordinary food than of the means of gratifying this acquired want. Europeans also who have resided long among the betel-chewers contract the habit, and enjoy it quite as much as the natives.

Betel, or *pawn*, as it is called in Bengal, consists of part of the fruit of the areca palm, folded in the leaves of a kind of pepper plant, called *betel*, smeared with a little lime, procured by burning shells, and from the form thus given to the article, the term *betel-nut* is derived.

The areca palm is a tree growing to the height of forty or fifty feet, with a straight round stem, six or eight inches in diameter, covered with a smooth ash-coloured bark, marked with parallel rings. The leaves, of which there are only six or seven, spring from the top, and are six feet in length, declining downwards from a stalk of considerable length. The fruit or nut is enveloped in a green shell or skin, thin, brittle, and of the consistence of paper: it is of an oval shape, like a small egg, and is much like a nutmeg when deprived of its husk. When ripe it appears in clusters of a reddish colour, forming a beautiful contrast with the bright green of its leaves, and it then falls off to sow itself in the ground.

The betel plant is a species of vine, with a leaf somewhat like that of the ivy. It is the *Piper betel* of botany, in the natural order *Piperaceæ*, and of the same genus as the *Piper nigrum* of Linnæus. Its culture, which is carefully attended to, is managed in the same manner. Poles are planted in the ground, round which the betel twines itself, and as it runs up, the poles, having taken root, acquire greater height also. It is a creeping plant, deriving support from more hardy vegetables, but it is said not to be injurious to them, like some other plants of a similar nature. Particular attention is bestowed on the cultivation of the areca and the betel. It was stated some years ago that the number of trees in the Prince of Wales's Island amounted to 342,110.

In different parts of India betel is cultivated in gardens on an extensive scale. The soil most favourable for the palm is a black mould on a substratum of limestone, or intermixed with calcareous nodules. It is planted in rows, and carefully manured and watered during several years. It begins to bear from the eighth or tenth to the fifteenth year, and remains in perfection for thirty years. Some individuals, however, produce fruit up to the seventieth, or even the hundredth year, but the produce gradually declines both in quality and quantity. It is stated that every fertile tree produces on an average 857 nuts, and an ordinary tree as many as 600, but this is by no means a general rule, for some trees produce only about 200 nuts.

The betel leaf is cultivated either in separate gardens, where a red stony soil on the side of a rising ground is preferred, and plantains or bamboos planted along with the vines, which are arranged in trenches, to support them as they grow: or when an areca plantation is formed and the palms are about fifteen years old, cuttings of the vine are planted near the roots, and

trained up to the trees. In twelve or eighteen months the leaves of the vine are fit for sale, and in three years they have attained their full size; in the fourth year they die, and new plants must then be substituted. In about eighteen or twenty years the soil is considered to be exhausted. The gardens are always inclosed by a hedge; nevertheless the depredations of squirrels and even of elephants sometimes occasion great loss to the cultivators. The crop of the areca is produced during three months; and the nuts being pulled are each cut into seven or eight pieces, and piled up in a heap: equal quantities of it and of terra japonica, with a hundred leaves of betel-leaf, are then beaten together with water and the juice strained off. This is mixed with a decoction of the *Mimosa indica* and water, and the nuts from the whole heap are boiled in it. They are then dried in the sun. The fresh nut cannot be eaten, because in its crude state it contains a white viscous matter, insipid to the taste, but occasioning delirium, a property which is lost by boiling or drying the nut.

Betel is therefore compounded of three ingredients, the union of which is supposed to correct the effects which each would produce singly: the nut improves the bitterness of the leaf, and the lime prevents any injury to the stomach. The first consequences to the betel-chewer are to turn the saliva red, and in progress of time to make the teeth black. If the lime be omitted, the saliva will not be tinged; and the baneful effect of this alkali on the enamel of the teeth may be prevented by rubbing them with a preparation whereby they become permanently coated with a black substance which preserves them from corrosion.

The medicinal effects of betel are to dispel nausea, to excite an appetite, and to strengthen the stomach. It also possesses nutritious and enlivening qualities which render it very acceptable to its consumers. The terra japonica is not a universal ingredient; its use is limited to certain countries; and it is probably nothing more than a preparation from the areca nut itself. There are two varieties of this substance; the one very astringent, and the other less so, and rather sweet, which is preferred. To obtain the former, the fresh nuts are boiled during some hours in an iron vessel; the decoction is then strained off, and thickened by continued boiling. The nuts being dried, are subjected to a second boiling, and the nuts being taken out, this second decoction is thickened by evaporation, and thus the best terra japonica is procured. The nuts are then dried, cut into pieces, and sold. Terra japonica is also procured by boiling the wood of the keira tree, or *Mimosa catechu*. This substance is probably the same as the *gambir* of Sumatra, which we shall presently mention.

The betel-chewers carry the ingredients for compounding betel about with them, and serve it to their guests on all occasions; the prince in a gold stand, and the poor man in a brass box, or mat bag. The betel-stands of the upper ranks are usually of silver embossed with rude figures. The sultan of Mocomoco was presented with one by the East India Company with their arms on it: the sultan also possessed a box made of gold filagree, which Mr. Marsden describes thus; the form of the stand is the frustrum of an hexagonal pyramid, reversed, about six or eight inches in diameter; it contains many smaller vessels, fitted to the angles, for holding the nut, leaf, and *chunam*, or quick-lime; with places for the instruments (kachiss) employed in cutting the first, and spatulas for spreading the last.

When the first salutation is over, which in Sumatra consists of bending the body, and the inferior putting his joined hands between those of the superior, and then lifting them to his forehead, the betel is presented as a token of hospitality, and an act of politeness. To omit it on the one hand, or to reject it on the other, would be an affront; as it would be also, in a person of subordinate rank, to address a great man without the precaution of chewing it before he spoke. All the preparation consists in spreading on the sirih leaf, a small quantity of the chunam, and folding it up with a slice of the pinang nut. Some mix with these, *gambir*, a substance prepared from the leaves of a tree of that name, by boiling their juices until a thick mass is obtained, from which little balls or squares are made: tobacco is also added, which is shred fine for the purpose, and carried between the lip and upper row of teeth. The red hue which is communicated to the mouth and lips is esteemed ornamental: and an agreeable flavour is imparted to the breath. The juice is usually, after the first fermentation produced by the lime, though not always, swallowed by the chewers of betel. In some countries it is not unusual for the guest who receives the betel from his host, to pass it between his thumb and fore-finger, and apply his own chunam, a practice which never gives offence, and is supposed to have originated from the horrible practice, once so common, of mixing up poison in the lime. The person, therefore, who receives the betel wipes off the chunam of his host, and applies his own before he passes the betel into his mouth.

It might reasonably be supposed that the active qualities of betel would injure the coats of the stomach, but experience seems to disprove such a consequence. It is common to see the teeth of elderly persons stand loose in the gums, which is probably an effect of this custom, but Mr. Marsden does not think that it affects the soundness of the teeth themselves. Children begin to chew betel very young, and yet, he says, their teeth are beautifully white, till pains are taken to disfigure them, by filing, and staining them black. To persons who are not accustomed to the composition, it causes a strong giddiness, astringes and excoriates the tongue and fauces, and deadens for a time the sense of taste. During the fast of *Ramadan*, Mahomedans abstain from the use of betel whilst the sun continues above the horizon; but excepting at this season it is the constant luxury of both sexes, from an early period of childhood, till, becoming toothless, they are reduced to the necessity of having the ingredients previously reduced to a paste for them, that without further effort the betel may dissolve in the mouth.

It is related in the *Life of Sir Stamford Raffles*, that when Lady Raffles reached Merambung, in Sumatra, being much fatigued with walking, the rest of the party having dispersed in various directions, she reclined under the shade of a tree, when a Malay girl approached in a graceful manner, and on being asked if she wanted anything, replied, "No, but as you are quite alone, I thought you might like to have a little *bicara* (talk;) so I came to offer you some *siri*, (betel,) and sit beside you."

It is stated in the *Encyclopædia Britannica* that

Betel is a very considerable article of traffic in India and in China, and, indeed, throughout Asia. In the British settlements of Bombay, Madras and Bengal, the value of the imports amounted in a single year to 138,836*l.*; and if the quantities consumed throughout the East are taken into view, it will appear surprising how they can be obtained. But, owing to the constant and extensive demand, the plants affording the necessary ingredients are carefully cultivated; and multitudes are employed and subsisted in the production of this eastern luxury.

When all is quiet and the mind at rest,
All in the calm of innocence are blest;
But when some scruple mixes with our joy,
We love to give the anxious mind employ.

CRABBE.

BEING persuaded of nothing more than of this, that, whether it be in matter of speculation or of practice, no untruth can possibly avail the patron and defender long, and that things most truly are likewise most behovefully spoken.—HOOKER.

AGRICULTURAL CHEMISTRY.

2. On the Interchange of Crops (*concluded*), and on Manures.

When we grow in the same soil for several years in succession different plants, the first of which leaves behind that which the second, and the second that which the third, may require, the soil will be a fruitful one for all the three kinds of produce. If the first plant, for example, be wheat, which consumes the greatest part of the silicate of potash in a soil, whilst the plants which succeed it are of such a kind as require only small quantities of potash, as is the case with the leguminosæ, turnips, potatoes, &c.; the wheat may be again sowed with advantage after the fourth year; for during the interval of three years, the soil will, by the action of the atmosphere, be rendered capable of again yielding silicate of potash in sufficient quantity for the young plants. But if there be a successive growth of plants on the same soil which extract the same component parts, they gradually render that soil incapable of producing them.

The nutriment of young plants consists of carbonic acid, contained in the soil in the form of humus, and of nitrogen in the form of ammonia, both of which must be supplied to the plants. The formation of ammonia cannot be effected on cultivated land, but humus may be artificially produced. The sowing of a field with fallow plants, such as clover, rye, buck-wheat, &c., and the incorporation of the plants, when nearly at blossom, with the soil, effect this supply of humus in so far, that young plants subsequently growing in it find, at a certain period of their growth, a maximum of nutriment, that is, matter in the process of decay. The same end is obtained, but with much greater certainty, when the field is planted with esparsette or lucern. These plants are remarkable on account of the great ramification of their roots and strong developement of their leaves, and for requiring only a small quantity of inorganic matter. Until they reach a certain period of their growth, they retain all the carbonic acid and ammonia which may have been conveyed to them by rain and the air, for that which is not absorbed by the soil is appropriated by the leaves: they also possess an extensive four or six-fold surface capable of assimilating these bodies, and of preventing the escape of ammonia from the soil by completely covering it in.

An immediate consequence of the production of the green principle of the leaves, and of their remaining component parts, as well as those of the stem, is the equally abundant excretion of organic matters into the soil from the roots. Matter is thus supplied which is capable of being converted into humus.

It will be seen, then, that the interchange of crops is so advantageous, because by the cultivation of different kinds of plants upon the same field in a proper order of succession, each kind of plant extracts only certain component parts of the soil, whilst it leaves behind or restores those which a second or third species of plant may require for its growth and perfect developement. But although the quantity of humus in a soil may be increased by artificial cultivation, manures are necessary to replace the constituent parts of the soil which are removed in the seeds, roots, and leaves, of the plants raised upon it.

When we consider that every constituent of the body of man and animals is derived from plants, and that not a single element is generated by the vital principle, it is evident that all the inorganic constituents of the animal organism must be regarded, in some respect or other, as manure. During their life, the inorganic components of plants which are not required by the animal system, are disengaged from the organism. After their death, the nitrogen and carbon pass into the atmosphere as ammonia and carbonic acid, the products of their putrefaction, and, at last, nothing remains except the phosphate of lime and other salts in their bones. Now this earthy residue of the putrefaction of animals must be considered, in a rational system of agriculture, (continues Professor Liebig,) as a powerful manure for plants, because that which has been abstracted from the soil for a series of years must be restored to it, if the land is to be kept in a permament condition of fertility.

The author then proceeds to the analysis of various kinds of animal manure, in order to ascertain what substances a soil really receives by their means; whether these manures are all of a like nature and power; and whether, in every case, they administer to the necessities of a plant by an identical mode of action. We cannot follow up these details: but we may remark, that the fertilising properties of manures are due to the presence of ammonia, in some form or other. Plants obtain their nitrogen from ammonia, which is supplied to them by animal manure. It is a point, therefore, of the greatest importance to the agriculturist to supply nitrogen in sufficient quantity, and the readiest form in which it exists is putrescent animal liquid, which contains nitrogen in the forms of carbonate, phosphate, and lactate of ammonia, and in no other form than that of ammoniacal salts. Hence, great loss is experienced by the farmer in allowing his heaps of manure to exhale into the atmosphere their most fertilizing properties. The nitrogen of the heap escapes under the form of carbonate of ammonia, and a mere carbonaceous residue of decayed plants is after some years found in its place. The loss from the escape of ammonia from manure is very great, and, in spreading manure over land, there is a loss of fertilizing properties which, with a little care, might be preserved. The method of preservation is to mix the manure with such substances as rapidly absorb the volatile matters. Gypsum, chloride of calcium, sulphuric or muriatic acids, superphosphate of lime, may be employed for this purpose: they may be procured at a very low price, and their action is to convert the volatile ammonia into salts which possess no volatility. If a basin, filled with concentrated muriatic acid, be placed in a stable, it becomes filled, after a few days, with crystals of muriate of ammonia. The ammonia which escapes from stables, &c., is not only entirely lost as far as our vegetation is concerned, but it also works a slow, though not less certain, destruction of the walls of the building. For, when in contact with the lime of the mortar, it is converted into nitric acid, which gradually dissolves the lime. The ammonia emitted from stables, &c., is always in combination with carbonic acid. Carbonate of ammonia and sulphate of lime (gypsum), cannot be brought together at common temperatures without mutual decomposition. The ammonia enters into combination with the sulphuric acid, and the carbonic acid with the lime, forming compounds which are not volatile, and, consequently, destitute of all smell. Now if we strew the floors of our stables, from time to time, with common gypsum, they will lose all their offensive smell, and none of the ammonia which is formed can be lost, but will be retained in a condition serviceable as manure.

The application of manures to land requires much careful discrimination and a great deal of knowledge respecting what component parts of the soil were removed by the crops which preceded the manuring. In horse manure we restore to the land some of the component parts of the hay, straw, and oats, with which the horse was fed. Their principal constituents are the phosphates of lime and magnesia, carbonate of lime, and silicate of potash; the first three of these preponderate in the corn, the last in the hay. The peculiar action of solid animal manure is limited to their inorganic constituents, which restore to the land that which is removed in the form of corn, roots, or grain. When straw which has been used as litter is added to the land, a further quantity of silicate of potash and phosphates is restored;

which, if the straw be putrefied, are in exactly the same condition in which they were before being assimilated.

The vegetable constituents of manure has some influence on the fertility of land, for by their decay carbonic acid is furnished to the young plants. But their influence is probably not very great when it is considered that a good soil is manured only once every six or seven years, or once every eleven or twelve years, when esparsette or lucern has been raised on it, that the quantity of carbon thus given to the land corresponds to only 5·8 per cent. of what is removed in the form of herbs, straw, and grain, and further, that the rain water received by a soil contains much more carbon in the form of carbonic acid than these vegetable constituents of the manure.

The use of animal manure in the crude form frequently does harm to the soil by disseminating the seeds of weeds which have remained in the manure without being deprived of their power of germination, and yet, says Liebig, it is considered surprising that where they have once flourished, they cannot again be expelled by all our endeavours: we think it very astonishing, while we really sow them ourselves every year. The botanist Ingenhous, attached to the Dutch embassy to China, could scarcely find a single plant on the corn-fields of the Chinese, except the corn itself.

Bone manure, from the quantity of phosphates of lime and magnesia contained in it, is a valuable substance for land. Liebeg says that the manure of an acre of land with 40 lbs. of bone dust is sufficient to supply three crops of wheat, clover, potatoes, turnips, &c., with phosphates. But the form in which they are restored to a soil is not a matter of indifference. For the more finely the bones are reduced to powder, and the more intimately they are mixed with the soil, the more easily are they assimilated. The most easy and practical mode of effecting their division is to pour over the bones, in a state of fine powder, half of their weight of sulphuric acid diluted with three or four parts of water, and after they have been digested for some time, to add one hundred parts of water, and sprinkle this mixture over the field before the plough. In a few seconds, the free acids unite with the bases contained in the earth, and a neutral salt is formed in a very fine state of division. Experiments instituted on a soil formed from grauwacke, for the purpose of ascertaining the action of manure thus prepared, have distinctly shown that neither corn, nor kitchen-garden plants suffer injurious effects in consequence, but that on the contrary they thrive with much more vigour.

In glue-manufactories many hundred tons of a solution of phosphates in muriatic acid are yearly thrown away as being useless. Professor Liebig suggests the importance of examining whether this solution might not be substituted for the bones. The free acid would combine with the alkalis in the soil, especially with the lime, and a soluble salt would thus be produced, which is known to possess a favourable action upon the growth of plants. This salt, muriate of lime (or chloride of calcium) is one of those compounds which attracts water from the atmosphere with great avidity, and might supply the place of gypsum in decomposing carbonate of ammonia, with the formation of sal-ammonia and carbonate of lime. A solution of bones in muriatic acid placed on land in autumn or in winter would, therefore, not only restore a necessary constituent of the soil, and attract moisture to it, but would also give it the power to retain all the ammonia which fell upon it dissolved in the rain during the period of six months.

There are numerous details in Professor Liebig's work, which, though of first-rate importance, are not suited to our pages. Our subject is rather to excite attention to this subject than to gratify it: and we cannot but express a hope that the views of the author may be fairly tested by our Agricultural Societies, and reduced to a set of plain rules and directions for the benefit of all persons engaged in agricultural pursuits.

The subject of manures is only now beginning to be understood; but it seems to be a principle of agriculture, that those substances which have been removed from a soil must be completely restored to it, and whether this restoration be effected by means of animal manure, ashes, or bones, is in great measure a matter of indifference. Liebig loooks forward to the time when the fields will be manured with a solution of glass (silicate of potash), with the ashes of burnt straw, and with salts of phosphoric acid, prepared in chemical manufactories, exactly as medicines are now prepared to be administered to the patient, as the exigency of the case requires.

China is the birth-place of the experimental art; the incessant striving after experiments has conducted the Chinese a thousand years since to discoveries, which have been the envy and admiration of Europeans for centuries, especially in regard to dyeing and painting, and to the manufactures of porcelain, silk, and colours for painters. These we were long unable to imitate, and yet they were discovered by them without the assistance of scientific principles: for in the books of the Chinese we find recipes and directions for use, but never explanations of processes.

Half a century sufficed to Europeans not only to equal but to surpass the Chinese in the arts and manufactures, and this was owing merely to the application of correct principles deduced from the study of chemistry. But how infinitely inferior is the agriculture of Europe to that of China! The Chinese are the most admirable gardeners and trainers of plants, for each of which they understand how to prepare and apply the best adapted manure. The agriculture of their country is the most perfect in the world; and there, where the climate in the most fertile districts differs little from the European, very little value is attached to animal manure. With us, thick books are written, but no experiments instituted; the quantity of manure consumed by this and that plant, is expressed in hundredth parts, and yet we know not what manure is.

THOSE who, in confidence of superior capacities, or attainments, disregard the common maxims of life, should remember that nothing can atone for the want of prudence; that negligence and irregularity long continued will make knowledge useless, wit ridiculous, and genius contemptible. —JOHNSON.

SEEK you to train your favourite boy?
Each caution, every care, employ,
And, ere you venture to confide,
Let his preceptor's heart be tried;
Weigh well his manners, life, and scope:
On these depend thy future hope.—GAY.

IT is truly a most Christian exercise to extract a sentiment of piety from the works and the appearances of nature. It has the authority of the sacred writers upon its side, and even our Saviour himself gives it the weight and the solemnity of his example. "Behold the lilies of the field; they toil not, neither do they spin, yet your heavenly Father careth for them." He expatiates on a single flower, and draws from it the delightful argument of confidence in God. He gives us to see that taste may be combined with piety, and that the same heart may be occupied with all that is serious in the contemplations of religion, and be at the same time alive to the charms and the loveliness of nature. —DR. CHALMERS.

WITH us it has all the authority of a moral aphorism, that the sobrieties of human virtue can never be invaded, without the equities of human virtue being also invaded. The moralties of human life are too closely linked and interwoven with each other, as that though one should be detached, the others might be left uninjured and entire; and so no one can cast his purity away from him without a violence being done to the general moral structure and consistency of his whole character.

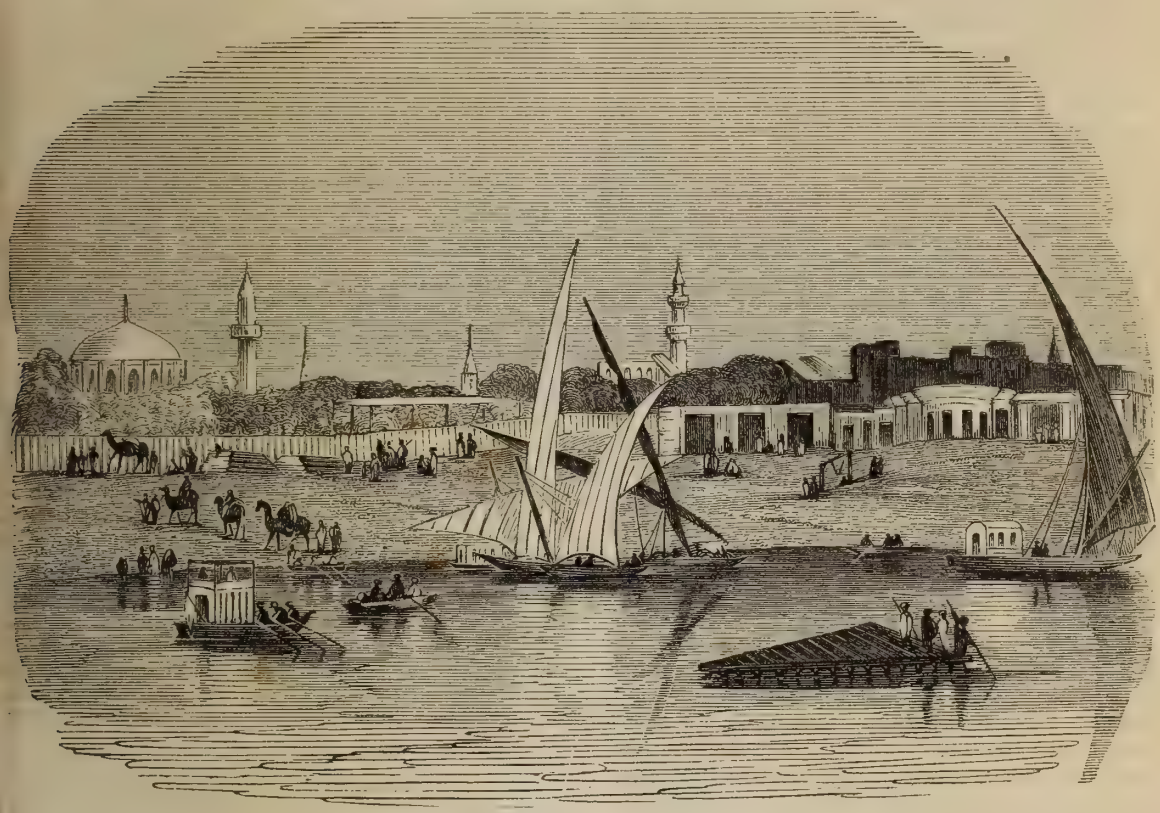
LONDON:
JOHN WILLIAM PARKER, WEST STRAND.
PUBLISHED IN WEEKLY NUMBERS, PRICE ONE PENNY, AND IN MONTHLY PARTS, PRICE SIXPENCE.
Sold by all Booksellers and Newsvenders in the Kingdom.

THE

Saturday Magazine.

No. 588. SUPPLEMENT, AUGUST, 1841. { PRICE ONE PENNY.

A STEAM VOYAGE TO INDIA.



LANDING-PLACE AT BOULAK, NEAR CAIRO.

INTRODUCTION. DIFFICULTIES CONNECTED WITH A STEAM VOYAGE TO INDIA.

Motions and means, on land and sea, at war
With old poetic feeling, not for this
Shall ye, by poets even, be judged amiss;
Nor shall your presence, howsoe'er it mar
The loveliness of Nature, prove a bar
To the Mind's gaining that prophetic sense
Of future change, that point of vision whence
May be discovered what in soul ye are.
In spite of all that beauty may disown
In your harsh features, Nature doth embrace
Her lawful offspring in Man's art; and Time,
Pleased with your triumphs o'er his brother Space,
Accepts from your bold hands the proffered crown
Of hope, and smiles on you with cheer sublime.—

WORDSWORTH.

THE advantages resulting from the establishment of steam-navigation are so numerous, that we need not feel any surprise at the attempt to extend its benefits to our Eastern possessions. A few minutes' inspection of a terrestrial globe, or of a good map of the world, will show how circuitous is the route by which the passage from England to India is made, round the southern promontory of Africa; and a little consideration of the peculiar winds prevalent in the Indian seas, and known by the names of the *trade winds* and the *monsoons*, would show how desirable it is to have a motive power for shipping independent of the winds. Hence have arisen two different classes of projects; one for establishing a route to India shorter than the accustomed one round the Cape of Good Hope; and another, for performing the voyage in steam-vessels instead of sailing-vessels. Each of these classes of projects has had numerous advocates, who, in too many cases, have carried on the discussions relative to the subject in a spirit of partisanship which has done more evil than good.

In attempting to select a shorter route than the accustomed one, the attention of navigators was naturally directed to the Mediterranean, the western end of which communicates with the Atlantic, and the eastern end is separated by a comparatively short distance from two seas which empty themselves into the Indian Ocean, viz., the Red Sea and the Persian Gulf. If we notice the position of the north-east corner of the Mediterranean, we see that it is not very far distant from the upper part of the river Euphrates, which flows downward into the Persian Gulf, and thence into the Indian Ocean. We also see that from the mouth of the River Nile, on the Mediterranean coast, to Suez at the head of the Red Sea, the distance is very small, and that this narrow tract of land, called the Isthmus of Suez, is the only bar to an uninterrupted water communication from England to India. Now these two facts have been the bases on which numerous projects have been founded within the last few years. Colonel Chesney and other officers have been commissioned by the English Government to survey the river Euphrates, with the view of ascertaining whether an available route might be established in that direction; while at the same time various public companies have been established for forwarding what we may perhaps term the Red Sea project. The books, pamphlets, debates, letters, and plans which have been published on these subjects are so numerous, that a bare enumeration of them would exceed our limits; and we shall therefore simply state, that for the present the Euphrates plan appears to be abandoned, chiefly on account of the lawless character of the natives on either bank of that river. We shall therefore confine ourselves to the other project. A voyage was made by the *Enterprise* steam-vessel from

England to India, round the Cape of Good Hope, as long back as the year 1825; and a steam voyage was made from Bombay to Egypt, by way of the Red Sea, in 1830; and it then became a question, on observing the success of these two attempts, how far the Red Sea might be made the channel of a steam-packet route from England to India. To show the manner in which it has been proposed to work out this plan, we will give a short abstract of a scheme for establishing a post-office communication on this route proposed by Captain Head in 1832. He proposed that the post-office steamers, which at that time ran once a month from Falmouth to Malta, should carry the mail-packet to the last-mentioned place, performing the distance of 2250 miles in sixteen days. After stopping two days at Malta, the packet was to be forwarded by steam to Alexandria, the great commercial port of Egypt; the distance, about 837 miles, being performed in six days. At about half-way between Alexandria and Suez, that is, between the Mediterranean and Red Seas, lies the city of Cairo; and it was supposed that a land journey of from four to six days, by way of Cairo, would convey the packet from Alexandria to Suez. It was proposed that another steamer should be ready to convey the packet from Suez to Bombay; but as this distance is nearly three thousand miles, it was proposed to establish a coal depôt at Aden, at the mouth of the Red Sea, 1323 miles from Suez. The vessel was to remain two days at Aden, for the purpose of taking in a supply of coals and other stores, and was then to proceed on her voyage to Bombay, from which place communication might be held with Calcutta and Madras in the way most convenient. It was calculated that the whole distance from Falmouth to Bombay, about 6250 miles, might be traversed in fifty-one days.

The above is a very fair example of the plans which were proposed in reference to this subject; but it soon became evident that many difficult questions had to be decided before the practical adoption of any such plans could be resolved on. Among these questions were such as the following;—whether the plan should be put in operation by the Government, by the East India Company, or by private joint-stock companies; whether the whole route should be undertaken by the same company, or whether one company should perform the passage from England to Egypt, and another from Egypt to India; whether Mehemet Ali, the Pacha of Egypt, would countenance the establishment of a route through his dominions; whether the route from Alexandria to Cairo should be performed by land, or by boats or packets along the river Nile; whether the steam-voyage should terminate at Bombay, or should be extended round the southern point of India to Madras and Calcutta; and lastly, whether it should be only a post-office communication, or one for travellers generally. Slowly, and not till after much warm controversy and discussion, have these difficult questions been decided; and we proceed to state the actual results which have been attained.

In the early part of the year 1838, it was announced that the Sultan of Aden, at the mouth of the Red Sea, had surrendered that place to the English, for the purpose of a coal depôt, on an annual compensation to be paid to him by the East India Company. The acquisition of this town, which has the best harbour in the Red Sea, placed the steam-communication between Bombay and Suez, on a firmer footing than before. This possession, however, was not undisturbed by the restless and fierce propensities of the Arabs; for in the Autumn of 1839 a daring attack was made on the town by the ex-sultan and six thousand Arabs. The attack was completely repelled; and the Arabs had cause to lament the instigations of their chief, who told them "that all the buttons worn by the English were of solid gold, and that precious stones and valuables of all kinds awaited their expected victory." This discomfiture was followed by a determination on the part of the Arabs to starve out the English, if possible; they completely cut off the communication from Aden to the interior, and killed any straggling soldiers of the garrison whom they met with. The garrison had to obtain provsions by the aid of their ships. Matters continued much in the same state till towards the middle of the year 1840, when the Arabs made three desperate attempts to gain the town, in May, June, and July; but they were invariably repulsed with great loss; and the Indian government strengthened the garrison and fortifications of Aden. From the accounts which reached England in the early part of the present year, it appears that the Arabs had discontinued their attacks, the hard-worked soldiers had recovered their health, the supply of provisions was abundant, the climate very fine, and the trade of the town increasing; so we may now probably reckon Aden as a permanent English establishment, and as a depôt for the Red Sea steamers.

From this mention of Aden, we pass on to notice the proceedings of the steam-companies. The voyage from Bombay to Suez and back continued to be made at intervals, long before the completion of arrangements for continuing the voyage to England. On the 1st of April, 1840, the *Victoria* steamer left Bombay; reached Aden on the 9th; set sail again on the 17th, after remaining at Aden twenty-seven hours; and reached Suez on the 14th; thus performing the journey from Bombay to Suez, 2992 miles, in less than sixteen days and a-half. She set sail again on the 21st; reached Aden on the 27th; and arrived at Bombay on the 6th of May. The mail from England happened to reach Suez, after a rapid voyage, about three days after the arrival of the *Victoria* at that place; and it thence resulted that despatches from England, dated April 5th, actually reached Bombay on the 6th of May, after an interval of only thirty-one days. This unexampled celerity of communication acted as a great spur to the furtherance of the plans on this subject. About the middle of the year, two of the companies which had entertained projects on this subject, seemed to approximate towards an agreement. One of these companies proposed to forward mails and letters to and from India by two routes, one a land-route through France *via* Marseilles, and the other a sea-route by Falmouth and Gibraltar; both uniting at Malta.

The outward mails through France were to leave London on the 4th of every month; while the sea-packets were to start on the 1st; both to reach Malta on the 13th, and to start from thence to Alexandria on the 14th. The land-route was principally for the post-department, as allowing letters to be despatched three days later; but for the sea-route, the vessels were to be fitted up for the reception of passengers. The vessels were to leave the passengers and letters at Alexandria, from whence they were to be despatched to India by any other company which might act in concert with the one just alluded to; and were then to return to England with the mail from India. The arrangement proposed to Government, with respect to the post-office, was, that letters would be conveyed throughout the distance from London to Alexandria in fifteen days, and from Alexandria to London, on account of adverse winds in the Mediterranean, in sixteen days.

It has proved, in this as well as many other projects in which steam-power is concerned, that the estimates have been more than equalled by the performances. The following is an extract from the log of the *Oriental*, for her first trip to Alexandria and back, in the autumn of the year 1840:—

Outward Voyage.	Hours	Distance Naut. Miles.
Time steaming from Falmouth to Gibraltar..	122¼	1064
" " Gibraltar to Malta	111¼	980
" " Malta to Alexandria ..	95½	824
Total time out (steaming,).....	329½	2868
Or 13 days, 17½ hours.		
Homeward Voyage.		
Time steaming from Alexandria to Malta ..	92¾	825
" " Malta to Gibraltar	109½	983
" " Gibraltar to Falmouth..	119	1068
Total time home (steaming,)	321	2876
Or 13 days, 9 hours.		

The stoppages at Gibraltar and Malta are not reckoned in this account; but, including the allowance for them, the vessel performed the whole distance out and home in 36¼ hours less than the contract time.

As a farther elucidation of the singular effects which this rapid system of travelling may be supposed to produce on the old modes of communication, we give the following from a Calcutta journal of last year:—"The express which came in on the 27th May to Calcutta from Bombay, with the Europe mail, left that presidency on the 7th. Thus, there was communication between London and Bombay in one month and two days, and between London and Calcutta in one month and twelve days—or forty-two days! the shortest period on record. On the 26th of February, the residents at the Cape were in possession of English intelligence to the 4th of December, received from Madras, whither it had been conveyed by the overland mail! Who would have supposed, ten years ago, that the Cape of Good Hope, then the half-

way house for English news on its way to India, would at this date be indebted to an arrival from this country for its own share of intelligence?"

It was not until the early part of the present year that the various difficulties to which we alluded in the former part of this paper, were overcome by the coalition of two companies; of which companies, one was formed principally of persons connected with the Mediterranean traffic, and the other of mercantile men in India, who were more nearly acquainted with the traffic of the Red Sea. By the united exertions of the two bodies, the whole distance from England to India will be placed under the regulations of one system; and it appears, from an announcement in the public journals about three or four months ago, that arrangements are being made for extending this communication, not only to Bombay, the nearest important city of India, but also to Ceylon, Madras, and Calcutta, with the full sanction and support of the East India Company. The Government has also contracted for the conveyance of mails to and from Alexandria and London, one mail to start every month in each direction. Arrangements are also being made for placing steamers on the Nile, for the more speedy conveyance from Alexandria; and also, with the sanction of the Pacha of Egypt, the land route over the Desert from Cairo to Suez is being made more efficient. It thus appears that the plans which have been for sixteen or eighteen years under discussion, will at length be brought into practical application, in a manner which meets the wishes and receives the sanction of the Government, of the East India Company, and of the commercial world in general.

Section I. Route to India by way of Egypt and the Red Sea.

We now propose to follow out an idea which has been partially acted on in three of our former Supplements, viz, to make an imaginary trip from India to England, or from England to India, and notice the chief objects of interest on the way. On the occasions just alluded to, our journeys were overland through Persia; but we now intend to trace the route followed by travellers under the new system, in which Egypt and the Red Sea constitute portions of the route. A lively and pleasing writer, the late Miss Emma Roberts, made this journey in the latter end of the year 1839; and from her graphic account of the incidents and details of her journey, we shall be able to illustrate in a tolerably clear manner the nature of this remarkable and diversified route. We shall borrow from other sources in our notice of cities and countries.

Miss Roberts accompanied her sister, the lady of Captain Mc Naghten, to India in 1828, where she remained three or four years; after which she returned to England. But the alterations in the commercial arrangements of India, consequent on the renewal of the Company's Charter, having given a new tone to Anglo-Indian society, she was desirous of once again visiting a land which had many pleasant associations for her. She quitted England in September, 1839, arrived at Bombay in November in the same year, and resided in different parts of Western India for about ten months, when she died, to the universal regret of the European inhabitants in that land.

The route followed by this lady was overland through France, by packet from Marseilles to Alexandria, up the Nile to Cairo, across the Desert to Suez, and thence by sea to Bombay. Miss Roberts and a female friend proceeded to Havre, by steam. After staying a few hours at Havre, the travellers proceeded by another steamer to Rouen, up the river Seine. Of Havre Miss Roberts says:—"Havre appears to carry on a considerable commerce with India, several shops being wholly devoted to the sale of the productions of the East, while the number of parrots and monkeys to be seen show that the intercourse must be very extensive. The shops had a very English air about them; and though the houses were taller, and rather more dilapidated in their appearance, than they are usually found at home, they reminded us of familiar scenes; and but for the novelty of dining at a *table d'hôte*, we might have fancied ourselves still in England..... English carriages were arriving every hour; the steamer from Southampton brought an immense number of passengers, and travellers seemed to flock in from every part of the world."

At 4 o'clock on the following morning the travellers left Havre in the Rouen steamer. The banks of the Seine are picturesque, presenting pleasing objects of rural enjoyment; the houses have a neat and clean appearance, and are surrounded with little parterres or gardens filled with flowers. By about noon the steamer reached Rouen. This ancient city presents many attractions for a traveller, particularly those connected with the memory of Joan of Arc; but nothing seemed to arrest our travellers' attention more than the houses of the trading classes. Seven or eight stories in height, weather-stained, and dilapidated, the upper floors are so destitute of everything which an English person calls *comfort*, that the splendour of the shops below excites considerable surprise. It is, however, impossible to devote much time to descriptions of French towns, so we must proceed in our route. At 4 o'clock on the following morning, two boats proceeded from Rouen up the Seine, in one of which Miss Roberts and her companion embarked; and after going a certain distance up the river, they landed, and proceeded the rest of the way to Paris by a railway which had been recently opened. It may be here remarked, that, however pleasant may be a voyage up the river Seine, considered in respect of the scenery on its banks, an English traveller is always subjected to considerable inconvenience, on account of the strictness of the arrangements in France with respect to passports.

To describe anything relating to Paris would be, of course, unnecessary after our recent Supplements on that subject; we shall therefore merely say that the travellers proceeded by diligence to Chalons, having despatched their luggage by *messagerie* to Marseilles. Instead of stopping at Chalons, they proceeded uninterruptedly to Lyons, where they remained a few hours, and then started in a steamer down the river Rhone to Marseilles. They stopped for a short time at Beaucaire, the disembarking at which will remind many a traveller of scenes which they have witnessed. "The night was very dark, and a scene of great confusion took place in the disembarkation. We had agreed to wait quietly until the remainder of the passengers got on shore; and Miss E. and myself, glad to escape from the bustle and confusion of the deck, went down below to collect our baggage, &c. The quay was crowded with porters, all vociferating and struggling to get hold of parcels to carry, while the *commissionaires* from the hotels were more than ever eager in their recommendations of their respective houses: their noise and gesticulations were so great, and their requests urged with so much boldness, that we might have been led to suppose we had fallen into the hands of banditti, who would plunder us the moment we got into their clutches."

The distance from Beaucaire to Marseilles is traversed in the course of a few hours. Marseilles is a city and seaport of France, the capital of the department of Bouches de Rhone (Mouths of the Rhone). It is not situated exactly at the mouth of the Rhone, but some short distance from it, on the eastern curve of the Gulf of Lyons, and therefore on the shores of the Mediterranean. Its direct distance from Paris in a straight line is rather more than four hundred miles; but by the route usually followed by travellers through Auxerre, Chalons, and Lyons, it is about five hundred. Marseilles was known by the name of *Massilia*, so long ago as six hundred years before the Christian era, it having been founded by a colony of Ionians. During the long interval which has since elapsed, more than twenty-four centuries, Marseilles has ever been a place of importance; first in the hands of the Greek colonists; then as a Roman city; then as a possession of the Franks; afterwards as the capital of the Kingdom of Provence; subsequently as a port whence several armaments of Crusaders sailed; and in more recent times as a commercial city of the French kingdom. The site of Marseilles is a rich valley or hollow inclosed on the land-side by hills, and on the sea-side by a harbour formed of an inlet of the sea. From the summit of a hill on the north side of the town, a fine view is obtained of the town and of the numerous country-houses (said to be five or six thousand in number,) which occupy the surrounding parts of the valley. The entrance from Paris is by a fine broad planted road or street, which extends into the heart of the town, and is prolonged in a direct line, by a street of less width, quite through the town. Eastward of this street is the old town, occupying a triangular point north of the harbour; while the western side constitutes the new town, which consists of broad straight streets, provided with paved foot-paths and lined with well-built houses. The port or harbour is capable of containing twelve hundred vessels, and is surrounded by fine quays used as a promenade by the townsmen in fine weather. There are several other promenades, as well as open squares or "places." As a commercial city Marseilles is one of the first in France, since the entire French trade with the

Levant, as well as a considerable portion of that with Italy, Spain, and Barbary, is carried on from that port. The number of vessels which enter the port is estimated at five or six thousand annually; and the customs and other dues collected are estimated at nearly one million sterling. It has communications by daily public conveyances with Lyons, Aix, Avignon, Nismes, Toulon, Geneva, and other places; and by steam-boats at brief intervals with Nice, Genoa, Leghorn, Bastia, Civita Vecchia, and Naples; and at longer intervals with Port Vendre, Barcelona, and Valentia. The commercial character which these communications impart to Marseilles makes it the resort of foreigners of all nations; and the variety of costume, continual bustle, and medley of languages which this circumstance occasions, are among the most striking features of the place.

The great increase of letters consequent on the reduction of the rates of postage in England and France, as well as the rapidity of communication with India by way of Egypt, have led to the establishment of packets at Marseilles, for the conveyance of mails between that place and Malta. In some instances this is altogether a French speculation, while in others it results from an arrangement between the post-office authorities of the two countries. As an illustration of the mode in which the route *viâ* Marseilles is made available to English correspondents, we may mention that, on the 4th day of every month for the last year and a half, a mail-packet has left London, with letters of that date, and proceeded through France to Marseilles, where a steamer was in readiness to forward it to Malta, in time to meet another steamer which left Falmouth with passengers on the 1st of the same month; the letters and passengers afterwards proceeding in the same vessel to Alexandria. These circumstances being premised, it will be easier to understand the mode in which the travellers whom we propose to accompany, obtained a passage to Malta. There was an English steamer waiting at Marseilles, to carry the mail as soon as it should arrive from England; and a French steamer which was about to start immediately. Miss Roberts and her companion, therefore, after spending a short time at Marseilles, engaged a passage in the *Megara* English steamer, and proceeded on their journey as soon as the mails arrived from England.

A glance of the map of Europe will show, more clearly than words can describe, the route from Marseilles to Malta. Marseilles is at the northern margin of a kind of semicircular portion of the Mediterranean, the curve of which is formed by the continuous coasts of Spain, France, and Italy, and the base or diameter by the northern coast of Africa. Rather eastward of the centre of this semicircle are the islands of Corsica and Sardinia; while between the southern point of Italy and the shore of Africa is Sicily, at the southern extremity of which is the little island of Malta. This island is one of the most important in the Mediteranean, both in a political and a commercial point of view. It serves as a rendezvous and garrison for troops, to protect English interests in that part of the world; and it furnishes a convenient depôt and harbour for ships on their way along the Mediterranean. The distance along the Mediterranean from west to east, from Gibraltar to Egypt, is about two thousand miles, and Malta is situated not far from the middle point of this line. This very advantageous position gave rise to the arrangement to which we just alluded, whereby a steamer with passengers, *viâ* Falmouth and Gibraltar, meets a mail-packet, which left England three days later than the steamer, and proceeded to Malta by way of Marseilles. The distance from Marseilles to Malta is somewhat less than from Gibraltar to Malta, the former occupying a steamer about four days to traverse, and the latter about five days.

Section II. Arrival at Malta and Voyage to Alexandria.

We may now relieve these details by a few of Miss Roberts' pleasant notes of her journey from Marseilles to Malta. "The *Megara* belonged to a class of steamers built for the Government upon some new-fangled principle, and which have the art of rolling in any sea. Though the waters of the Mediterranean were scarcely ruffled by the breeze, which was in our favour, there was so much motion in the vessel, that it was impossible to employ ourselves in any way except in reading. In other respects, the *Megara* was commodious enough; the stern cabin, with smaller ones opening into it, and each containing two bed-places, was appropriated to the ladies, the whole being neatly fitted up. We found some agreeable fellow-passengers; the only drawback being a family of three children. In consequence of the cabins being thus occupied, we could not preserve the neatness and order which are so essential to comfort, and which need not be dispensed with even in a short voyage. Our commandant, Mr. Goldsmith, a descendant of the brother of the poet, and who appeared to have inherited the benevolence of his distinguished relative, was indefatigable in his exertions to render us happy." The only coasts in sight during the voyage to Malta, were those of Sardinia and Africa, Sicily being too far off to be visible; of Sardinia the travellers were only near enough to see a long succession of irregular hills, which presented a beautiful appearance by the light of an Italian sky. The vessel arrived at Malta on the morning of the fifth day from leaving Marseilles, having been four days and five nights on the voyage *. The travellers hastened to gain a view of the island, as soon as the vessel arrived before it. "Much as I had heard of the gay singularity of the appearance of Malta, I felt surprise as well as delight at the beautiful scene around; nor was I at all prepared for the extent of the city of Valetta. The excessive whiteness of the houses, built of the rock of which the island is composed, contrasted with the vivid green of their verandahs, gives to the whole landscape the air of a painting, in which the artist has employed the most brilliant colours for sea and sky, and habitations of a sort of fairy-land. Nor does a nearer approach destroy this illusion; there are no prominently squalid features in Malta; the beggars, who crowd round every stranger, being the only evidence, at a cursory gaze, of its poverty."

Miss Roberts found, on reaching Malta, that the *Acheron* steamer had arrived there from Falmouth and Gibraltar, with the Levant mails, and that these mails were to be forwarded to Alexandria in the government steamer *Volcano*. The reader will remember, that, at that period (the autumn of 1839,) affairs were in a very unsettled state between Mehemet Ali and the European powers; and the travellers were recommended to proceed in the government steamer to Egypt without delay, as the best means of ensuring a passage to the Red Sea. Miss Roberts and her lady companion then went on board this vessel, and proceeded on their journey to Alexandria. In her notes she made sad complaints of the neglect and inattention which the passengers experienced from the officers of the government steamer; but, as we believe that the proceedings of the last year and a half have made many favourable changes in this respect, we will not detail the circumstances which gave rise to the complaints. Suffice it to say, then, that the vessel, after a five days' voyage, arrived at Alexandria. It may be convenient to the reader to bear in mind, that the overland mail-route from London to Marseilles, the sea-route from Falmouth to Gibraltar, from Gibraltar to Malta, from Marseilles to Malta, and from Malta to Alexandria, do not differ one from another in point of time more than about one day; the average time for all these portions of the journey being from four to five days each. The route from Malta to Alexandria passes somewhat to the south of the island of Candia, but is in other respects almost entirely out of sight of land. The *Vulcan* had on board one of Mehemet Ali's *protégés*, a young Egyptian who had been educated at the pasha's expense in England, where he had resided for ten years, principally in the neighbourhood of a dock-yard, in order to study the art of ship-building. Although the temperature is almost too high for comfort, yet the Mediterranean steamers are often kept cool by a wind-sail, which keeps up a current of air in the cabins.

The *Volcano* had other ladies on board; and, on landing at Alexandria, "the lady-passengers, who arrived in the steamer, agreed to prosecute the remainder of the journey in company; our party, therefore, consisted of four, with two servants and a baby; the latter a beautiful little creature, of seven months old, the pet and delight of us all. This darling never cried, excepting when she was hungry; and she would eat anything, and go to anybody. One of the servants who attended upon her was a Mohammedan native of India, an excellent person, much attached to his little charge; and we were altogether a very agreeable party, quite ready to enjoy all the pleasures, and to encounter all the difficulties, which might come in our way."—If there ever is a time when a cheerful tone of spirits is necessary, it is at such a period as this, when females, accustomed to the comforts of English society, are about to brave the rude and often lawless customs of an Oriental country, deprived of those associations which a residence at home presents to them.

* For an account of Malta, see *Saturday Magazine*, vol. XVII., pp. 82, 170, 250.

Referring to our Number 534 for a description of Alexandria, we may here merely remark, that Miss Roberts found it all that travellers describe it to be, a city of narrow streets choked with sand; and, as the political state of Egypt rendered it desirable to hasten her departure for the Red Sea as much as possible, she set off for the Nile, to proceed by boat up that river to Cairo. The party left the hotel in which they had been accommodated, and rode to the place where they were to take boat. The cavalcade was a curious one:—"Our supplies consisted of tea, coffee, wine, wax-candles, (employing a good glass lanthorn for a candlestick), fowls, bread, fruit, milk, eggs, and butter; a couple of fowls and a piece of beef being ready roasted for the first meal. We also carried with us some bottles of filtered water. The baggage of the party was conveyed upon three camels and a donkey, and we formed a curious-looking cavalcade as we left the hotel. In the first place, the native Indian servant bestrode a donkey, carrying at the same time our beautiful baby in his arms, who wore a pink silk bonnet, and had a parasol over her head. All the assistance he required from others was to urge on his beast, and by the application of sundry whacks and thumps, he soon got a-head. The ladies, in coloured muslin dresses, and black silk shawls, rode in a cluster, attended by the janissary, and two Arab servants, also on donkey-back; a gentleman, who volunteered his escort, and the owners of the donkeys, who walked by our sides." On arriving at the banks of the canal which leads from Alexandria to the Nile, the party got into a miserable-looking boat containing two cabins or rather cribs, in which the ladies could hardly stand upright. The arrangements had not then been entered on, which have since been put in operation, of performing the voyage to Cairo in commodious iron steamers; and the passengers passed a sleepless night on board this boat, tormented, in no small degree, with musquitoes and other unwelcome visitors.

On arriving at Atfee, preparations were made for ascending the Nile. Nearly all the boats at that place were engaged by Mehemet Ali, who happened to be at Atfee at the time; but the governor of the town engaged that one should be placed at the disposal of the travellers. All these matters, it will be observed, are now put in better train by the establishment of steamers on the Nile. The mails were carried up to Cairo in the same boat which carried the travellers.

The voyage up the Nile was made in tolerable comfort, the ladies enjoying as much open air as the size of their boat would allow, and watching whatever objects were presented to their notice from shore. However famed may be this noble river, yet to a traveller by it, the banks on either side are singularly uninteresting; date trees thinly scattered, and villages at wide intervals, are nearly the only objects which break the monotony of the flat shores. The boat was propelled in three different ways, according to circumstances; by sails; by oars, or by dragging with ropes along a towing-path. "Our arrival at a village," says Miss Roberts, "alone relieved the monotony of the landscape. Some of these places were prettily situated under groves of dates and wild fig-trees, and they occasionally boasted houses of a decent description; the majority, were, however, most wretched, and we were often surprised to see persons respectably dressed, and mounted upon good-looking donkeys, emerge from streets and lanes leading to the most squalid and poverty-stricken dwellings imaginable. The arrival of a boat caused all the beggars to hasten down to the river-side; these chiefly consisted of very old or blind persons. We had provided ourselves with *paras*, a small copper coin, for the purpose of giving alms to the miserable beings who solicited our charity; and the poor creatures always went away well-satisfied with the trifling gift bestowed upon them." The far-famed Pyramids came in sight when still thirty-five miles distant; and on the second evening after embarkation the boat entered Boulak, the port of Cairo.

It was at half-past nine in the evening, on October 4th, 1839, that the travellers landed at Boulak; and as the gates of Cairo are closed at nine in the evening, it was apprehended that admission would not be gained that evening. It fortunately happened, however, that there was a *moolid*, or religious fair, held that evening at the opposite end of the city, and that the gate adjacent thereto was still open. The party, therefore, hired donkeys, and proceeded round the outside of the city, passing through the middle of the fair on their way to the open gate. The peasants were not a little surprised to see, by the light of their lamps and lanthorns, a group of European ladies riding on donkeys, at ten or eleven o'clock at night; but no insult or hindrance was offered to them, and they safely arrived at the hotel in Cairo to which they were recommended. Here we must leave them for awhile. Our articles on Cairo will give a tolerably exact idea, so far as they extend, of the curiosities and inhabitants of this Egyptian metropolis; and we shall therefore refrain from entering into similar details here.

Section III. Arrangements for crossing the Desert.

It will now be desirable for us to notice a few points respecting the route from Cairo to Suez, the place of embarkation on the steamers destined for Bombay. From the banks of the Nile to Syria is one continuous desert, into which juts the arm of the Red Sea, at the extremity of which Suez is situated. Hence the upper part of this arm or branch is bordered on both sides by desert tracks; and Suez cannot be reached except across the Desert, whether in a south-western direction from Syria, a southern direction from the Mediterranean, or an eastern direction from Cairo. The route to Suez by way of Cairo is not made on account of shortness, for it is really longer than if passengers landed from the Mediterranean at a point due north of Suez, but because there is no convenient harbour at the last-mentioned spot, and no secure town on the route. For these reasons, the route by way of Alexandria and Cairo is adopted; and the latter place having been reached, a journey of about seventy miles over the Desert has to be made to Suez.

Now it is a question of no small importance how this route shall be traversed in a manner at all safe and comfortable. A military officer, inured to the vicissitudes of active service, could gallop over this distance in a few hours, and could easily accommodate himself to the fare he might meet on the way; but if a regular line of communication, for passengers as well as letters, is to be established, it is obvious that so precarious a channel would not suffice. Perhaps we could not better explain the views which have been entertained of the best mode of surmounting these difficulties, than by giving a few extracts from a report made by an officer appointed to inquire into this matter. In the early part of the year 1838 one of the steam navigation companies to which we before alluded, sent Colonel Burr to Egypt, to forward certain plans for performing the overland portion of the journey from Cairo to Suez. In a letter which that officer wrote from Cairo in the month of March in that year, he thus alludes to the nature of the arrangements which he was making.

"I have nearly completed an arrangement, by which four comfortable carriages, for the conveyance of at least thirty passengers, will be set going by September next; I only await Colonel Campbell's approval to complete the thing. The advance for the purchase of the four carriages, with two baggage waggons, and forty mules, will be 1000*l*., the property being ours, and merely lent to the contractors, who engage to keep the whole in an efficient state for at least five years, and to carry passengers in, say twenty-four hours, including halts, for 6*l*. each." After proceeding to express a hope that the Pacha would lend his countenance to the project, the Colonel details an agreement which he had made with a Cairo firm for building stations at certain distances on the line of route. From a report subsequently made by the committee of the company which had sent out Colonel Burr, it appeared, that supposing the Pacha's consent could be obtained, of which there seemed little doubt, it was proposed to build a centre station and four intermediate ones. The centre station to contain one room twenty-four feet by eighteen, and five sleeping apartments of fourteen feet by twelve, and fifteen feet high, with stabling and other requisite buildings; the whole inclosed and protected by a wall fifteen feet high, built of stone. A water-tank also to be added, sufficiently large for the use of the mules. The intermediate bungalows, or stations, were to be similar in character, but rather smaller.

The arrangements proposed as to the hours of starting and the rate of travelling were these:—*From Cairo.* If more than a sufficient number of passengers for one van are anxious to proceed to Suez, the first van to start within forty-eight hours before the departure of the steamer from Suez, and the second within twelve hours after the first. If only sufficient passengers for one van, to start thirty-six hours before the departure of the steamer; or as may otherwise be agreed on by the majority of passengers. *From Suez.* The first van to start six hours after the landing of the first lady passengers from the steamer; the second, twelve hours after the first, if the number of passengers exceed ten In the event of there being no lady passengers,

then the first van to start six hours after the landing of the first ten male passengers. Ladies to have always a prior claim as to proceeding by the first or subsequent carriages. The rate of travelling to be twenty hours actual travelling; two and a half hours stoppage at the central station; and three quarters of an hour at the other stations.

Such were the views which, in 1838, were entertained of the most feasible mode of establishing a regular route across the Desert. It was in the autumn of 1839 that Miss Roberts made this journey; and we shall now see the manner in which she performed it, and the incidents which she met with on the way. The ladies of the party, after remaining two or three days in Cairo, set off together to traverse the Desert to Suez, where the *Berenice* steamer had just arrived from Bombay. The vehicles provided consisted of donkey-chairs, one for each lady; consisting of a common arm-chair fastened into a sort of wooden tray, which projected in front about a foot, thereby enabling the passenger to carry a small basket or other package; each chair was slung by the arms to long bamboos, one on either side, and these, by means of ropes or straps placed across, were fastened upon the backs of donkeys, one in front and one behind. This formed a very comfortable vehicle; and the party were well pleased with the kind of accommodation. Besides the vehicles, there were two stout donkeys, carrying the beds and carpet-bags of the whole company; three others on which servant-men rode; and a few spare ones in case of accident on the road; while the owners or drivers of the donkeys were eight or ten in number. Thus the cavalcade proceeded, at an easy walking pace; and reached the first *bungalow*, or travellers' resting-house, by the evening of the first day. The bungalow was then in an unfinished state, being unprovided with windows; but it was sufficiently forward to furnish the required shelter. The building was approached from the front by a narrow passage, on either side of which were sleeping-rooms for travellers, as well as a kitchen, &c.; while at the farther end was stabling for the animals. The rooms were at that time unprovided with beds; but the beds which the travellers brought with them were spread out, and made as comfortable as circumstances would admit.

The party started again at nine o'clock on the following morning, with the air at a warm temperature, but moderated by a pleasant breeze which blew across the desert. On the road they were overtaken by a *kalifa*, which they had seen bivouacking in the desert the previous evening. This kalifa or party consisted of the governor of Jiddah, who was travelling to Suez with his wife and family. The lady travelled in a vehicle formed of two rude kinds of sofas or settees, canopied overhead, and having a resting-place for the feet; it was placed on the top of a camel, with a cloth curtain, to exclude the sun, and to ensure the privacy customary among Mohammedan females. The travellers, on their way to Suez, occasionally met small parties of Bedouins, distinguished by their fierce countenances glaring from beneath the large rolls of cloth twisted over their turbans. One or two, superior to the rest, were handsomely dressed, well armed, and mounted on handsomely caparisoned camels. Small as the means of defence were on the part of the travellers, the Bedouins did not attempt to plunder their baggage; the power of Mehemet Ali having infused a spirit of obedience into these men, such as pachas and governors can seldom effect.

About the middle of the day they arrived at another bungalow, where they stopped an hour or two; here they again found the kalifa which had passed them in the morning, the females of which shared with our travellers the scanty accommodation of the place. The party was soon again in motion, enjoying the curious scene which their own cavalcade must have presented. The five vehicles were sometimes abreast, giving the riders an opportunity of conversing; but more frequently they were scattered over the plain, the guides allowing the donkeys to choose their path provided its general direction were onward. Occasionally a spare donkey, or one carrying the baggage, would stray off in an oblique direction, and then the drivers were compelled to make a wide detour to bring them in again. Once or twice, too, the ropes by which a chair was fastened, would slip, and deposit the fair occupant on the ground; or a donkey would stumble and fall; but no serious accident occurred. The resting-place for the night, at about midway from Cairo to Suez, consisted of tents, the bungalow having been only just commenced. The ladies of the party occupied one tent, on either side of which were divans or raised platforms, on which to place the beds. There were other tents occupied by English gentlemen who were passing from Suez, where they had landed from the *Berenice;* and thus the desert became a kind of half-way station, (it is not far from being so in actual distance,) at which English travellers to and from India met.

The next morning, soon after they had started, the travellers met a double-bodied phaeton, drawn by two horses and two camels, having an English gentleman and a Persian within, and an Arab riding as postilion on one of the camels; this curious medley had just come from Suez, and was proceeding at a rapid rate to Cairo. These were followed by other passengers by the *Berenice*, some of whom were ladies riding in donkey-chairs, and others mounted on the backs of camels. In the middle of the day our travellers arrived at another bungalow; where they met one of the vans which had been provided for this route by the Steam Navigation Company; it consisted of a tilted cart upon springs, and was drawn by a pair of horses. Nothing farther occurred worthy of notice till they arrived at the resting-place for the night; when they were overtaken by three English gentlemen, who had wished to visit the Pyramids before proceeding onward to India, and who had crossed the desert in great haste. The whole party were to start at three o'clock in the following morning; and while all else were asleep, Miss Roberts silently left her tent by starlight, and roamed forth with an object which we will state in her own words:—"I had long desired to spend a night alone upon the desert; and without wandering to a dangerous distance, I placed a ridge of sand between my solitary station and the objects which brought the busy world to view, and indulged in thoughts of scenes and circumstances which happened long ago. According to the best authorities we were in the track of the Israelites; and in meditations suggested by this interesting portion of Bible history, the time passed so rapidly, that I was surprised when I found the people astir and preparing for our departure."

The party started at three o'clock, and did not stop till they arrived at the end of the journey, except for a few minutes at the last bungalow, which they reached at nine o'clock. It was about the middle of the fourth day, after having spent three nights and portion of four days on the road, that they reached Suez. The reader, by comparing the details just given, with the plans proposed in the early part of 1838 for the passage of the desert, will see that those plans had been acted on to a slight extent, by the establishment of one or two bungalows, and one or two vehicles to traverse the route. But many circumstances, to which we need not particularly allude here, prevented the proposed plan from being carried out in its fullest extent; and the contests which took place during the year 1840 between Mehemet Ali and the European powers put a temporary check on the prosecution of these schemes, although the Pacha, in the midst of his difficulties, seemed generally disposed to guarantee the safe conduct of English travellers across the desert. The termination of hostilities in that quarter has allowed attention to be steadily directed to this overland route; and at the present time increased facilities for travellers are being provided, by the establishment of iron steamers from Alexandria to Cairo, and of convenient vehicles and resting-places from Cairo to Suez.

We may here say a few words respecting the route from Cairo to Suez across the Desert. There are the strongest reasons for believing that a ship canal anciently existed along this route, by which a vessel could sail uninterruptedly from the Mediterranean to the Red Sea. Passages in some of the early writers clearly point to the existence of such a canal; while the researches of modern travellers have no less clearly led to the tracing of a remarkably level valley, or, if we may use the term—trough, which was once filled with water. When the French had possession of Egypt, the engineers who accompanied the army surveyed this track with much accuracy, and formed a plan for re-opening the ancient canal. It appears not improbable that if the French had retained possession of that country, they would have carried out a scheme which offered such an advantageous naval path to our Indian possessions, towards which Buonaparte was known to have directed a longing eye. As events turned out, however, the scheme was abandoned; but still it has not been forgotten; and we think that there is no impropriety or inconsistency in surmising that the time will come when one of these plans will be accomplished; viz.—the re-opening of the ancient canal from Cairo to Suez; the laying down of a railway on the very level valley which the site of this canal presents; or the establishment of a canal from the Mediterranean to Suez, altogether independent of the route by Alexandria, the Nile, and Cairo.

Section IV. Embarkation on the Red Sea.

We now proceed onward towards India. From Miss Roberts's account of Suez, it appears to be a place possessed of but few attractions:—"Distance lends no enchantment to the view at Suez. It is difficult to fancy that the few miserable buildings, appearing upon the margin of the sea, actually constitute a town; and the heart sinks at the approach to a place so barren and desolate. My donkeys carried me through a gap in the wall, which answered all the purposes of a gateway; and we passed along broken ground and among wretched inhabitants, more fit for the abode of savage beasts than men. Even the superior description of houses bore so forlorn and dilapidated an appearance, that I actually trembled as I approached them, fearing that my guide would stop and tell me that my journey was at an end." There were two hotels or lodging-houses in the town, established by the agents of the English houses connected with the steam communication with India; and in one of these hotels Miss Roberts and her companions took up their abode for the two or three days of their stay in Suez. The *Berenice*, a government steamer in which the travellers embarked for Bombay, was complained of by Miss Roberts as being sadly unfitted for the wants of the passengers; but as this is one of the circumstances which have probably been put on a better footing since that time, we will not dwell on these discomforts.

It may be desirable to take a general sketch of the Red Sea, on which we are now embarked. This celebrated sea is a very long and narrow sheet of water, extending from Suez in a direction nearly south-east to the straits of Bab-el-Mandeb. At its upper or northern extremity it is divided into two diverging points, one proceeding north-west to Suez, and called the Gulf of Suez; the other proceeding north-east to Akaba, and called the Gulf of Akaba. Between these two Gulfs is a jutting promontory on which is situated Mount Sinai and many other spots celebrated in sacred history. After having left this promontory, and entered the sea into which the two gulfs jointly enter, we have Egypt on the west side, and Arabia on the east. The Arabian side presents to us, at distances greater or less from the shore, Medina, Mecca, Mocha, and other towns; while on the African side there are few places of importance besides Cosseir and Berenice. Cosseir is the first of these towns to which we arrive; and as there are many curious circumstances connected with its position and history, we we will offer a few remarks on the subject.

Cosseir is situated on a part of the coast almost exactly parallel with the famed city of Thebes, on the Nile, at about a hundred miles distance from it; and there is evidence that there was anciently a considerable traffic in this direction. Cosseir was the sea-port of Thebes, at the time when that magnificent city was the metropolis of the Pharaohs. At the present day the road from Cosseir to Kenneh, a town on the Nile not far distant from Thebes, is spoken of as very good; indeed the obstacles to travelling seem to be so few, that Mr. Lushington, who some years ago crossed it in a journey homeward from Bombay in the depth of winter, records with high glee the gratification of enjoying an excellent Christmas dinner at the middle resting-stage of the journey, and describes the weather and the atmosphere, both during the night and day, as being bland, cheering and salubrious. Wells of good water have always subsisted about midway on the route; and it is said that excellent water has been found at other places by boring. One of the most extraordinary circumstances connected with this route is, that there are indications of what may be called a railway track having existed there in former times; that is, that an artificial level appears to have been constructed for the whole distance, as a means of diminishing friction. In the evidence given before a Committee of the House of Commons on steam communication with India, a few years ago, several witnesses gave it as their opinion, from ocular inspection, that an excellent coach or wagon road might be formed with very little trouble from Cosseir to the Nile; and Colonel Burr, to whom we have before referred as an agent of one of the companies employed in establishing a convenient route from Cairo to Suez, was also directed by the company to visit the Cosseir route, and to ascertain the practicability of building stations. We believe, however, that the Suez route has been deemed more convenient of the two, and that the route by Cosseir is at present abandoned, so far as regular passengers to or from India are concerned. Of Cosseir itself, an English traveller, who visited it three or four years ago, thus speaks:—"Cosseir is a very small harbour, only capable of holding two or three ships, which take shelter to leeward of a coral reef, on which they lay their anchors, but subject to be driven on shore in case of a sudden change of wind; but as this seldom or ever happens, we have never had any accidents. The native boats, which draw very little water, lie close in to the town, and take their cargo of grain in with great facility. The town consists of about three hundred houses, ill built; and the inhabitants are merely those who are employed in shipping off grain, and a few who keep the bazaar. The English agent is a civil obliging creature, a son of the one at Genneh. Waghorn has a packet agent here: an Italian doctor serves him, Signor Morice, who stands upon a wooden leg..... A large caravan of camels, which were returning to Genneh after bringing over grain, afforded us a cheap opportunity of getting to the Nile. We hired three, for which we paid five piastres, each ten-pence. We bade adieu to Cosseir with gladness; and after the second hour of our journey, we saw the Red Sea for the last time. The caravan consisted of eighty camels."

At some distance southward of Cosseir, on the African shore of the Red Sea, is situated the remains of the ancient port of Berenice. As Cosseir was the site of the sea-port to Thebes under the dynasty of the Pharaohs, so was Berenice the metropolitan sea-point in the times of the Greek and Roman supremacy. The route from Berenice to Thebes appears never to have been used since the times just referred to, although Belzoni describes it as being one of the best harbours in the Red Sea. The town is in a state of complete ruin; and it does not appear that there are sufficient advantages attending this route to render a reconstruction desirable.

When we have proceeded sufficiently southward along the Red Sea to be opposite Mecca, we find on the Arabian coast the sea-port town of Jedda. It presents a very imposing appearance from the sea; but a nearer approach dissipates the favourable impression which its appearance from a distance is calculated to make, as is indeed the case with most Oriental towns. The port is formed by successive crescents of coral, behind which vessels can ride at anchor in perfect security, even in the roughest weather. As these reefs only rise to the water's edge, they afford shelter only from the sea; so that, while a vessel rides in perfect safety in smooth water, she remains exposed to the winds. When the wind blows strongly, the side of the reefs exposed to its force becomes fringed with a white feathery curl, which increases in height on their edges as they extend seaward. The houses of the town are constructed of madrepore, and consist of several stories; but from irregularity of design, and a certain dirtiness in their external appearance, they are not so pleasing as the houses in some other parts of Arabia. The windows are latticed, and the projecting balcony, so general an ornament to the buildings of the East, is here left unpainted, giving the dwellings a neglected and decayed appearance. The doorways and windows are in every variety of the Arabesque style. Like all Oriental towns, the streets are exceeding narrow, so that in some of them the sun cannot shine more than one hour of the day, and only at one season. The bazaars are well supplied; and, during the pilgrimage to Mecca, filled with strangers from all the Moslem countries of the East. The shops are small cells, about eight feet square, in which the merchant sits amidst his wares; the buyer stands in the street, and where the bazaar is not covered, a small mat or piece of sail-cloth protects him from the sun. Merchants, pilgrims, dervishes, and beggars, crowd the bazaars to excess.

Shortly after we have passed the sea-port and town of Mocha, (for a description of which we refer to our No. 243), we come to the strait of Bab-el-Mandeb, which is the narrow channel by which the Red Sea empties its waters into the Indian Ocean. It is formed by two projecting or approaching promontories of the Arabian and Abyssinian shores. From Cape Bab-el-Mandeb on the Arabian side, to the Abyssinian coast, the nearest distance is sixteen miles, which is therefore deemed the width of the strait. At a few miles distance from the Arabian shore is a little island called Perim, which divides the strait into two parts, of which the eastern is called the Little Strait, and the western the Great Strait. The Little Strait is the one most generally used by seamen, principally because the depth of water is such as to allow of anchorage. The Large Strait, which is about nine or ten miles wide, is so very deep, that a rope of a hundred fathoms will not reach the bottom. The name of the strait, Bab-el-Mandeb, which, in Arabic, signifies the "Gate of Tears," seems to have been given in

consequence of the dangers to which small and light vessels are exposed in a narrow sea, surrounded by rocky shores, and subject to frequent gusts of wind. Although the Little Strait is four miles wide, yet the available width for navigation is less than a mile. A recent voyager, who entered the straits in an Arabian vessel, says, "It fell calm, and the current drifted us about in the narrowest part of the strait, which is hardly half a mile wide. The moon rose, and we were in some degree relieved from our anxiety, as it enabled us to judge our distance from the shore, and ascertain for certainty if we were taking the right course, which is hereabouts rather difficult to discover in the dark. Our jolly-boat was lowered, and we towed the vessel off the land, which we had approached so near, that, should any wind have blown, it would have been kept from catching our sail by the rocks, which frowned above us. The ancient mariners, by the names they have given to the different headlands and islands here and in the neighbourhood, have left us an everlasting memorial of the dangers attending the Eastern maritime commerce in those times. The entrance of the sea is called the Gate of Sorrow or Weeping; the Cape itself, Affliction; the extreme east-point of Africa, which must have been the last land they lost sight of, the Cape of Burial."

We at length arrive at Aden situated a short distance without the strait, and in the direct route from thence to Bombay; and here we join company again with Miss Roberts and her fellow travellers, whom we left at the upper part of the Red Sea. The party landed at Aden, and were conveyed in palanquins to the place where the cantonments were situated, now fast advancing towards the dignity of fortifications. The road led for a mile or two along the sea-shore, with high crags piled on one side; after which the party ascended a height, which led to an aperture in the hills called the Pass, around which was wild but beautiful scenery. The narrow and inclosed pass led down a rather steep declivity to a sort of basin, surrounded on three sides with lofty hills, and on the fourth by the sea. It will be remembered, from the circumstances which we detailed in the early part of the paper, that about the time when Miss Roberts visited Aden, the British settlements had not been freed from the hostile attacks of the Arabs. The following is that lady's account of the place as she found it at the time of her visit:—"At first sight of Aden, it is difficult to suppose it to be the residence of human beings, and more especially of European families. The town, if such it may be called, consists of a few scattered houses of stone, apparently loosely put together, with pigeon-holes for windows, and roofs which, being flat, and apparently surrounded by a low parapet, afford no idea of their being habitable. It is difficult to find a comparison for these dwellings, which appeared to be composed of nothing more than four walls, and yet to judge, from the apertures, contained two or more stories. The greater numbers were inclosed in a sort of yard or compound, the fences being formed of long yellow reeds; the less substantial dwellings were entirely made of these reeds, so that they looked like immense crates or cages for domestic fowls. My palanquin at length stopped at a flight of steps hewn out of the rock; and I found myself at the entrance of a habitation, half-bungalow, half-tent; and certainly, as the permanent abode of civilized beings, the strangest residence I had ever seen. The upright and framework were made of reeds and bamboos, lined with thin mats, which had at one time been double, but the harbour thus afforded for rats being found inconvenient, the outer casing had been removed." The explanation of this apparently strange state of things is this; that the Indian government had not at that time fixed upon the site intended for the station offices, &c., at Aden, and the European inhabitants delayed building their houses, which were to be durable stone structures, until the decision was made. Since that period, much progress has been made in developing the resources of Aden, and establishing it as a valuable dependency of the British crown.

Here we bring to a conclusion our notice of the interesting points connected with a steam voyage to India. From the peninsula on which Aden is situated, no land intervenes till the traveller arrives at Bombay; he leaves Socotra, an island which was at one time to have been used as a coal depôt instead of Aden, on the right, and the southern coast of Arabia, together with the entrance to the Persian Gulf, on the left. The importance of Aden consists partly in the fact, that, from that port a steamer can be supplied with fuel and all other stores for the voyage from thence to Bombay.

A little reflection on the details which have been given in this paper will convince the reader, that the grand project of steam communication with India, (for grand it certainly is,) is still only in its infancy, and that we may look forward to a successive chain of improvements in every part of the commercial machinery by which it is accomplished.

SUEZ.

LONDON Published by JOHN W. PARKER, West Strand, and sold by all Booksellers.

THE

Saturday Magazine.

No. 589. SEPTEMBER 4TH, 1841. {PRICE ONE PENNY.

SKETCHES OF CAIRO. II.

A TURKISH EFFENDEE WRITING A MEMORIAL.

THE houses of Cairo are generally of brick, cased externally, and often internally, with the soft calcareous stone of the neighbouring mountain, which when newly cut is of a light yellowish hue, but its colour soon darkens. The alternate courses of the front are sometimes coloured red and white, particularly in large houses, as is the case with most mosques. The superstructure projects about two feet: the roof is flat and covered with plaster.

The houses are rich in that description of ornament known to architects as the *Arabesque*, in which much taste and fancy are often displayed. Entrances to houses are often richly adorned, and over the doors is frequently sculptured the invocation *Ya Allah!* "O God!" and the words "The Creator is the Everlasting," or "He is the Creator, the Everlasting," painted in large black and white characters upon the door, both as a charm, and to remind the master of the house, whenever he enters it, of his own mortality.

Many of the tradesmen also place over their shops (generally upon the hanging shutter turned up in front) a paper inscribed with the name of God or that of the Prophet, or both, or the profession of the faith, ("There is no deity but God: Mohhammad is God's apostle,) the *bismillah*, ("In the name of God, the compassionate, the merciful,") or some maxim of the Prophet, or a verse of the Ckooran, as "Verily we have granted thee a manifest victory," or an invocation to the Deity, such as "O thou Opener [of the doors of prosperity or subsistence]! O thou Wise! O thou Supplier of our wants! O thou Bountiful!" This invocation is often pronounced by the tradesman when he first opens his shop in the morning, and by the pedestrian vender of small commodities, bread, vegetables, &c., when he sets

out on his daily rounds. It is a custom among the lower orders to put the first piece of money that they receive in the day to the lips and forehead before it is consigned to the pocket.

The apartments on the ground-floor next the street are furnished with small wooden grated windows, placed sufficiently high to prevent the passengers, even on horseback, from seeing through them. The upper windows project a foot or two, and are mostly formed of turned wooden lattice-work, which is so close that it shuts out much of the light and sun, and screens the inmates from view, while at the same time it admits the air. A little projecting window is sometimes formed so as to be constantly exposed to a current of air: within this are placed porous earthen bottles, for cooling water by evaporation. Many houses are furnished with glazed window-frames placed within the lattice-work, which are closed during winter.

The houses are generally two or three stories high; and almost every house that is sufficiently large incloses an open court, which is entered by a passage, constructed with one or two turnings, in order to prevent passengers from looking along it. In this passage, just within the door, is a long stone seat, built against the back or side-wall, for the porter and other servants. In the court is a well of slightly brackish water, which filters through the soil from the Nile, and on its most shaded side are commonly two water jars, which are replenished daily with water of the Nile, brought in skins. The principal apartments look into this court.

For a minute description of the various apartments, and the general domestic economy of the houses of Cairo, we refer the reader to Mr. Lane's valuable work. In the plan of almost every house there is an utter want of regularity. The apartments are generally of different heights, so that a person has to ascend or descend one, two, or more steps, to pass from one chamber to another adjoining it. The principal aim of the architect is to render the house as private as possible, particularly that part of it which is inhabited by the females of the establishment, and not to make any window in such a situation as to overlook the apartments of another house. Another object of the architect in building a house for a person of rank or wealth is to make a secret door, from which the tenant may make his escape, in case of danger from an arrest, or an attempt at assassination, and it is also common to make a hiding-place for treasure in some part of the house.

In every point of view, (says Mr. Lane,) Musr (or Cairo) must be regarded as the first Arab city of our age, and the manners and customs of its inhabitants are particularly interesting, as they are a combination of those which prevail most generally in the towns of Arabia, Syria, and the whole of Northern Africa, and in a great degree in Turkey. There is no other place in which we can obtain so complete a knowledge of the most civilized classes of the Arabs.

The term *Arab* is used, wherever the Arabic language is spoken, only to designate the Bedawees collectively: in speaking of a tribe or of a small number of those people, the word Orban is also used, and a single individual is called *Bedawee*. In Cairo the distinction of tribes is almost wholly lost, the native Mooslim inhabitants calling themselves commonly *El Musreeyeen*, *Owlad Musr*, and *Owlad el-Beled*, which signify "people of Musr," "children of Musr," and "children of the town."

The Mooslim Egyptians are described as a good-looking race of men, about the middle height, robust and well-proportioned, with fine open foreheads, and a half-smiling expression about the mouth which is rather prepossessing. It is difficult for the stranger to imagine how the poor little children that are seen with meagre skinny limbs, can ever acquire the well-built muscular frame of the young men.

Travellers have been struck with the number of men in Egypt who are either wholly or partially blind. Many suffer from ophthalmia and other diseases, but the practice was long common for mothers to extirpate the right eyes of their male children, to unfit them for military service. The Pacha adopted many plans for stopping this horrid practice, and none succeeded until he ingeniously ordered two regiments of one-eyed soldiers to be raised: the conscription being therefore no longer to be evaded by this mutilation, the custom ceased.

The costume of the Mooslims will be understood better by referring to figures than to printed descriptions. Among the few personal ornaments worn by the men the most remarkable is the seal-ring which decorates the little finger of the right hand. This ring is generally of silver with a cornelian or other stone, upon which is engraved the wearer's name, accompanied by the words "his servant," that is "the servant or worshipper of God," and often by other words expressive of the person's trust in God, &c. Mr. Lane says:—

The Prophet disapproved of gold; therefore few Mooslims wear gold rings, but the women have various ornaments (rings, bracelets, &c.) of that precious metal. The seal-ring is used for signing letters and other writings, and its impression is considered more valid than the sign-manual*. A little ink is dabbed upon it with one of the fingers, and it is pressed upon the paper, the person who uses it having first touched his tongue with another finger, and moistened the place in the paper which is to be stamped. Almost every person who can afford it has a seal-ring, even though he be a servant. The regular scribes, literary men, and many others, wear a silver, brass, or copper *dawáyeh*, which is a case, with receptacles for ink and pens, stuck in the girdle†. Some have, in the place of this, or in addition to it, a case-knife, or a dagger.

The Egyptian usually takes his pipe with him wherever he goes, (unless it be to the mosque,) or it is carried by a servant, although it is not common to smoke during a ride or a walk. He thrusts the tobacco-purse in his bosom; as also a handkerchief embroidered with coloured silks and gold, and neatly folded. Many persons of the middle orders who wish to avoid being thought rich, conceal their rich dress under a long black cotton gown, such as is worn by the lower classes.

In all Mohhammadan countries the most important part of the male attire is the turban, and the respect paid to it is very great. Its colours and forms are often prescribed by law, and serve as distinguishing marks whether of respect or aversion. In the houses of the more wealthy classes there is usually a particular chair devoted to its reception at night, which chair is never used for any other purpose. As an example of the respect paid to the turban, it was related to Mr. Lane that an *alim* (a man of science or learning) being thrown off his donkey in the streets of Cairo, his turban fell off and rolled along for several yards; whereupon the passengers ran after it, crying, "Lift up the crown of El-Islam!" while the poor alim, whom no one came to assist, called out in anger, "Lift up the *sheykh* (master or doctor) of El-Islam!"

As it is highly indecorous in a woman to discover her features except to her immediate relations, the veil is in constant use: this is a long narrow piece of muslin, suspended by a gold ornament from the upper part of the forehead, and covering the nose and lower half of the face: the eyes and part of the forehead being exposed. The expression of the eyes is considerably heightened by staining the eyelids with a black powder, called *kohl:* this is the smoke-black produced by burning an aromatic resin, or the shells of almonds. The kohl is applied with a small probe of wood, ivory, or silver, tapering towards the end, but blunt: this is moistened some-

* Therefore, giving the ring to another person is the utmost mark of confidence. See Genesis xli. 42.

† This is a very ancient custom. See Ezekiel ix. 2 3, 11.

times with rose-water, then dipped into the powder, and drawn along the edges of the eyelids. This custom prevailed among the ancient Egyptians, as is shown by the sculptures and paintings in the temples and tombs; and kohl-vessels, with the probes, and even the remains of the black powder, have been found in the ancient tombs.

Females are also accustomed to stain certain parts of their hands and feet with the leaves of the hhenna tree, or Egyptian privet, which impart a yellowish red, or deep orange colour. Many thus dye only the nails; others extend the dye as high as the first joint; some also make a stripe along the second joints: it is common also to dye the whole of the inside of the hand and sole of the foot. The colour is not permanent, but requires to be renewed after two or three weeks.

Many of the females of the lower orders adorn their persons with indelible marks of a blue or greenish hue. The operation is performed with several needles tied together: with these the skin is pricked in the desired pattern; some smoke-black mixed with milk is then rubbed in, and about a week after, before the skin has healed, a paste of the pounded fresh leaves of white beet or clover is applied, which gives a blue or greenish colour to the marks.

Parents in Egypt treat their children with the utmost love and tenderness; and however much the son is caressed and fondled, he generally displays a most profound and praiseworthy respect for his parents. Disobedience to parents is considered by the Mooslims as one of the greatest of sins, and accordingly an undutiful child is very seldom heard of among the Egyptians or the Arabs. Sons scarcely ever sit or eat, or smoke in the presence of the father, unless requested to do so; and they often even wait upon him and upon his guests at meals, and on other occasions: and they do not cease to act thus when they have become men.

But although the children are objects of so much solicitude, they are, with the exception of those of the wealthier classes, generally very dirty and shabbily clad. Mr. Lane says:—

The stranger here is disgusted by the sight of them, and at once condemns the modern Egyptians as a very filthy people, without requiring any other reason for forming such an opinion of them; but it is often the case that those children who are most petted and beloved are the dirtiest and worst clad. It is not uncommon to see, in the city in which I am writing, a lady shuffling along in her ample *tó'b* and *khab'arah* of new and rich and glistening silks, and one who scents the whole street with the odour of musk or civet as she passes along, with all that appears of her person scrupulously clean and delicate, her eyes neatly bordered with kohl, applied in the most careful manner, and the tip of a finger or two showing the fresh dye of the hhenna, and by her side a little boy or girl, her own child, with a face besmeared with dirt, and with clothes appearing as though they had been worn for months without being washed. Few things surprised me so much as sights of this kind on my first arrival in this country. I naturally inquired the cause of what struck me as so strange and inconsistent, and was informed that the affectionate mothers thus neglected the appearance of their children, and purposely left them unwashed, and clothed them so shabbily, particularly when they had to take them out in public, *from fear of the evil eye*, which is excessively dreaded, and especially in the case of children, since they are generally esteemed the greatest of blessings, and therefore most likely to be coveted.

The group shown in our frontispiece is taken from one of the prints in Mr. Hay's noble volume already referred to (p. 50), where it is also thus described:—A Turkish Effendee seated in a *wekaleh*, or building chiefly designed for the reception of merchants and their goods, writing a memorial for a client who appears in the *gibbeh*, or long cloth robe, over the *kuftán*, or silken vest, and with his *dawáyeh* or ink-horn in his girdle. The Effendee merely wears the saltah, or jacket, over his kuftán, and is seated upon one of the coarse mats of the country, another mat being used as a screen behind him. His *zarf*, or paper case, with his pipe, are beside him.

The writing paper used in Egypt is thick and glazed; it is chiefly imported from Venice, and glazed in Egypt. The ink is very thick and gummy. Reeds are used instead of pens; and they suit the Arabic character much better. The Arab, in writing, places the paper upon his knee, or upon the palm of his left hand, or upon what is called a *mis'ned'eh*, composed of a dozen or more pieces of paper attached together at the four corners, and resembling a thin book, which he rests on his knee. His ink and pens are contained in his *dawáyeh*, together with the penknife, and an ivory instrument upon which the pen is laid to be nibbed. He rules his paper by laying under it a piece of pasteboard with strings strained and glued across it, and slightly pressing it over each string. Scissars are included among the apparatus of a writer: they are used for cutting the paper: a torn edge being considered as unbecoming.

THE GOOD MISSIONARY.

He left his Christian friends and native strand,
By pity for benighted men constrained;
His heart was fraught with charity unfeigned;
His life was strict, his manners meek and bland.
Long dwelt he lonely in a heathen land,
In want and weariness,—yet ne'er complained;
But laboured that the lost sheep might be gained,
Not seeking recompense from human hand.
The credit of the arduous works he wrought
Was reaped by other men who came behind:
The world gave him no honour—none he sought,
But cherished Christ's example in his mind.
To one great aim his heart and hopes were given,—
To serve his God, and gather souls to Heaven.

PRINGLE.

THE joy, resulting from the diffusion of blessings to all around us, is the purest and sublimest that can enter the human mind, and can be conceived only by those who have experienced it. Next to the consolations of divine grace, it is the most sovereign balm to the miseries of life, both in him who is the object of it, and in him who exercises it; and it will not only soothe and tranquillise a troubled spirit, but inspire a constant flow of good humour, content, and gaiety of heart.—BISHOP PORTEUS.

THE tender parent, whose breasts have nourished, and whose prayers have blessed us, slumbers in the dust. The lovely child, whose life and qualities were just expanding to view, is cropped by an untimely blast. The friend of our bosoms, who was dear to us as our own souls, is gone, irrecoverably gone, to that bourn, whence no traveller returns. We think with sadness, that they once were. We sigh with anguish, that they will be here no more. But we shall go to them. We shall lie down in the grave together, and our ashes shall be mingled with theirs. In the morning of the resurrection, they will revive together. We shall appear with them before the throne of the Lamb. If we have been as little children, we shall enter with them into the kingdom of Heaven, where there shall be no more sorrow, separation, nor death; and God shall wipe away all tears from every eye.—DEHON.

THE strict honesty of the Bedawîn among themselves is proverbial, however little regard they may have to the right of property in others. If an Arab's camel dies on the road, and he cannot remove the load, he only draws a circle in the sand round about, and leaves it. In this way it will remain safe and untouched for months. In passing through Wady Sa'l on our way to 'Akabah, we saw a black tent hanging on a tree: Tuweilib said it was there when he passed the year before, and would never be stolen. Theft, he said, was held in abhorrence among the Táwarah, but the present year the famine was so great that individuals were sometimes driven to steal food. He had just returned from Egypt with a camel-load of grain for his family, which he had put into one of their magazines as a place of safety, but it had all been stolen. Burckhardt relates that he was shown in Wady Humr a point upon the rocks, from which one of the Táwarah, a few years before, had cast down his son headlong, bound hand and foot, for an offence of the very same kind.—ROBINSON'S *Palestine*.

SIEGE-PIECES.

Once more by Newark's castle-gate,
Long left without a warder,
I stood, looked, listened, and with Thee,
Great Minstrel of the Border.—WORDSWORTH.

NEWARK SIEGE-PIECE.

IN addition to the various sorts of money, both foreign and domestic, which we have considered in previous articles, we must now say a few words respecting those remarkable specimens of coin termed SIEGE-PIECES. They sometimes come under the appellation of OBSIDIONAL money; because these pieces are made to serve the purpose of regular money in a town which is in a state of siege, or so blockaded as to be cut off from communication with the rest of the country.

The usage of coining money for the immediate use of a blockaded town is very ancient, and the pieces thus struck generally bear in their fabrication and material, evidences of the calamitous and bereaved condition which gave rise to their existence. They are mostly of bad metal, and rudely formed; an observation to which some exceptions of course occur, but they are not numerous. The shape of these coins, or medals, varies:—sometimes they are round, sometimes oval, and sometimes square; occasionally, even octagon or triangular, &c. The type and inscriptions vary equally. Some are engraved on both sides, which, however, is rare; by far the greater part having no reverse. The arms of the besieged city are often found on them, and sometimes those of the sovereign or governor; but it is most common to see the *name* of the town only (either entire or abridged), with the date and value. The earliest specimens of this kind of money at present known, are those which were struck at the commencement of the sixteenth century, in Italy, at the sieges of Pavia and Cremona, under Francis the First. In 1529, a mint of this description was formed at Vienna, then besieged by the Turkish Sultan, Soliman the Second. The first war between Spain and Holland produced a considerable quantity of obsidional coins. It is scarcely necessary to observe, that these coins had merely a temporary and local value, like the *Tradesmen's Tokens** already described. They did not, therefore, pass into perpetual or general currency; but were in fact a sort of token or obligation contracted by the governor or the magistrates of the blockaded place, to meet the exigencies of the particular time.

We cannot but feel interested in remembering, that much of this obsidional money was put out by the Royalists, during the unhappy troubles and commotions which marked the reign of Charles the First. It is the more necessary for us to particularize, as we here refer back to the most engrossing times and events of our national history.

In regard to the unfortunate monarch just mentioned, we are told, that the unhappy situation of the king's affairs might be traced by his money, which grew worse and worse in the stamp, till at last they hardly deserved the name of *coins;* for they seemed to be rather the work of a smith (as perhaps they were), than of an engraver and coiner; it being manifest they were coined in the greatest hurry and confusion.

The principal English siege-pieces, of which specimens have come down to our times, are those stamped at Newark in 1643 and 1646, having the form of a lozenge, as may be seen at the head of this paper. Those stamped at the siege of Carlisle in 1645, are of an octangular shape. Of the Pontefract pieces, some are round, some octangular, and some lozenge-shaped. Another sort of money consisted merely of bits of silver-plate about an inch and a half long, with a rude representation of a castle stamped upon it, as that of Scarborough, as may be seen in the cut at the end of this article.

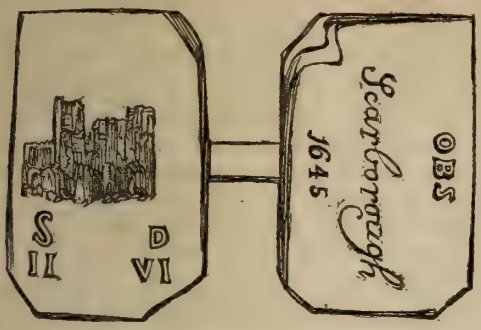
Newark, whose ancient castle, now in ruins, Wordsworth visited with his brother-poet, Sir Walter Scott, was held by a body of Royalists under the command of Sir John Henderson, at the beginning of the civil war. This town is in Nottinghamshire, and stands on an arm of the river Trent. In 1644, it was besieged by a body of Parliamentary forces under Sir John Meldrum and Lord Willoughby of Parham. Prince Rupert, advancing to relieve the place, surprised the besieged by the rapidity of his march, drove part of their forces over the Trent, and compelled another portion to capitulate, with all their artillery and ammunition. In the winter of 1644-5, it was again besieged by the Parliamentarians, but without success, the garrison having been relieved by Sir Marmaduke Langdale, who was sent by Prince Rupert for that purpose. The troops at Newark, now under Sir Richard Byron, being thus relieved from siege, were of material service to the King's cause in this part, beating some Parliamentary detachments, and keeping their posts in a state of alarm. Among other services, a detachment from this garrison assisted at the storming of Leicester in 1645. Not long after his defeat at Naseby, the king was at Welbeck, in the northern part of the county, and marched northward to Doncaster, with the view of joining Montrose in Scotland. Upon the arrival of a body of Scots, however, at Rotherham, the king retired to Newark, whither Sir Marmaduke Langdale had retreated after the battle of Naseby, in 1645. From Newark the King marched to Oxford, but was again at Newark in October, after the same year; and it was there that he was deserted by his nephews Rupert and Maurice, and by several of his officers. In November, being pressed by the approach of the Scots under the Earl of Leven, and by a body of Parliamentarians under Poyntz, from the west, he withdrew to Oxford. Newark was forthwith besieged by the Scots; and, in May, 1646, the King surrendered himself at Southwell to the Scotch commissioners, by whom he was conducted to the besiegers' quarters. The day after his arrival, Newark was delivered up by his orders.

The ancient and stupendous castle, once the glory, and still the ornament of Scarborough, was probably built in the reign of King Stephen. During the civil wars in the calamitous reign of Charles the First, this castle was twice besieged, and taken by the Parliamentary army. The first siege lasted for twelve months; and Sir John Meldrum, by whom the forces of Parliament were commanded, fell before the works. The command of the besieging army then devolved upon Sir Matthew Boynton, to whom Sir Hugh Cholmley, the governor, was obliged to surrender, on the 22nd of July, 1645. Colonel Boynton, the successor of the baronet, having declared for the King, the castle once more came into the hands of the Royalists; but, the garrison growing mutinous, the colonel was obliged to capitulate, and, on the 19th of December, 1648, the fortress was again surrendered to Parliament, and taken possession of in their name by Colonel Bethel. The castle, sharing the fate of its fellows, was dismantled by order of Parliament.

Scarborough is in the North Riding of Yorkshire,

* See Vol. XVII. p. 63, of this work.

and is situated in the recess of a beautiful bay on the shore of the German Ocean.



Siege-Piece of Scarborough

HOUR-GLASS AND BIBLE.

Look, Christian! on thy Bible, and that glass,
Which sheds its sands through minutes, hours, and days,
And years; it speaks not: methinks it says
To every human heart,—"So mortals pass
On to their dark and silent grave!" alas!
For man:—an exile upon earth he strays,
Weary, and wandering through benighted ways;
To day in strength, to-morrow like the grass
That withers at his feet. "Lift up thy head,
Poor pilgrim, toiling in this vale of tears;
That Book declares whose blood for thee was shed,
Who died to give thee life; and though thy years
Pass like a shade, pointing to thy death-bed,
Out of the deep thy cry an angel hears,
And by his guiding hand thy steps to Heaven are led."

Bowles.

In accordance with a former promise, the old man (the Superior of the convent of Mount Sinai) put into our hands a small quantity of the manna of the peninsula, famous at least as being the successor of the Israelitish manna, though not to be regarded as the same substance. According to his account it is not produced every year; sometimes only every five or six years, and the quantity in general has greatly diminished. It is found in the form of shining drops on the twigs and branches (not upon the leaves) of the Turfa, (*Tamarix Gallica mannifera* of Ehrenberg,) from which it exudes in consequence of the puncture of an insect of the coccus kind, (*Coccus manniparus* of the same naturalist.) What falls upon the sand is said not to be gathered. It has the appearance of gum, is of a sweetish taste, and melts when exposed to the sun or to a fire. The Arabs consider it as a great delicacy, and the pilgrims prize it highly, especially those from Russia, who pay a high price for it. The Superior had now but a small quantity, which he was keeping against an expected visit from the Russian consul-general in Egypt. Indeed, so scarce had it become of late years, as to bear a price of twenty or twenty-five piastres a pound.

Of the manna of the Old Testament it is said:—"When the dew that lay was gone up, behold, upon the face of the desert a small round thing, small as the hoar-frost on the ground,—and it was like coriander-seed, white; and the taste of it was like wafers with honey. And the people gathered it, and ground it in mills, and beat it in a mortar, or baked it in pans, and made cakes of it, and the taste of it was as the taste of fresh oil. And when the dew fell upon the camp in the night, the manna fell upon it." Of all these characteristics not one is applicable to the present manna. And even could it be shown to be the same, still a supply of it in sufficient abundance for the daily consumption of two millions of people would have been no less a miracle.—Robinson's *Palestine*.

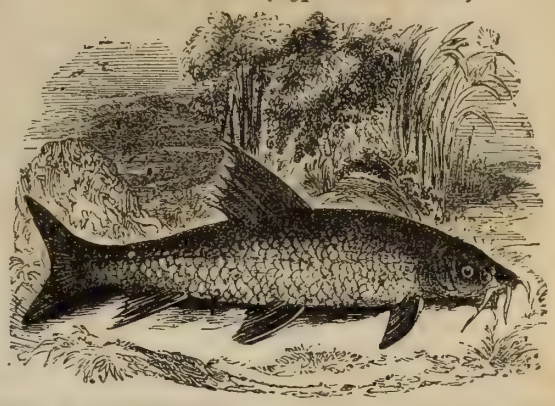
A man is seldom, if ever, unhappy for not knowing the thoughts of others; but he that does not attend to the motions of his own is certainly miserable.—Marcus Antoninus.

When to the angel's native home
The Father bids his children come,
Bids tears be dried, and sins forgiven,
Infant! of such as thou, is Heaven!—Croly.

FRESH-WATER FISH.

VII.

The Barbel. (*Cyprinus Barbus.*)



The name of this fish is derived from the *barbs, wattles,* or *cirri,* attached about its mouth. Many other fish are thus cirrated, and it appears probable that all such are ground-feeders, that is, they seek their food close to the bottom. In such genera as have these soft fleshy processes very highly developed, as in most of the *Siluridæ,* or cat-fish, they are employed to decoy others upon which they prey. The cat-fish, concealed from observation in the hollows of the bank, throws out his long cirri, which, being flexible, are mistaken for worms by other smaller fish, which are thus brought within reach of their true owner. They are much shorter among the cod-fish; and but slightly developed in the tench family. The long appendage rising from the nose of the frog-fishes (the genus *Lophius* of Linnæus), is analogous to these cirri.

It is probable, (says Mr. Swainson,) that these amphibious-looking creatures are the most imperfect swimmers in the whole class: and being carnivorous, this inaptitude for pursuing their prey is made up to them by a very long filament rising from the head, and terminated by a flat spoon-shaped enlargement, so as to bear a ludicrous resemblance to a fishing-line with a bait at the end: the fish lurks in its hole, and throws out this natural line, and thus attracts its prey. Its vulgar name of fishing-frog is, therefore, peculiarly expressive; for it not only angles, but it is of that type which represents the amphibious frogs among the aberrant fishes.

The term *barbel* seems to have been derived from the Latin *barba,* a beard; or, rather, *barbatulus,* having a little beard: thus Cicero speaks of the *Barbatulus mullus.* The barbel is called *barbello* in Italy; *barbeau* in France, where the diminutive *barbillon* is used to express a little barbel. The term barbel is also used in heraldry, but in a more extended sense; for the comb and wattles of the cock are said to be *barbel,* when of a different colour from the rest of the body. The fish barbel, in the coat of Bar, forms one of the quarterings of the arms of Margaret of Anjou, Queen of Henry the Sixth, and founder of Queen's College, Cambridge. She was daughter of René, duke of Anjou, titular king of Jerusalem. These arms are very beautifully painted in glass in the windows of Ockwells, in Berkshire*.

The cirri of the barbel are four in number, two hanging from the angles of the mouth, and two rather shorter attached to the upper jaw near the snout. This fish is remarkable for the great extension of the upper jaw beyond the lower, and this formation probably assists the animal in stirring up the ground in search of worms and insects.

The barbel is sometimes called the *bluish-white carp:* it is a handsome fish; its colour is of a slight silvery gray, with a darker cast on the upper parts; the scales middle-sized, rounded, and well-defined; the dorsal fin

* For an account of this beautiful mansion, see *Saturday Magazine,* Vol. XVI., p. 90.

is rather small than large, situated on the middle of the back, and of a bluish-brown colour, with the second ray extremely strong, sharp, and serrated on both sides; the pectoral and ventral fins are pale brown and tipped with yellow; the tail is dull, purple, and forked; the snout or upper-lips reddish; the lateral line* straight or nearly so, and punctated with minute black dots. Mr. Blaine says, that—

There is to be observed (in full-grown barbels particularly) an incurvation of the last upper ray of the caudal fin or tail. With this the snared fish is able to make a very forcible attack on the line which holds him by a tail-stroke, in which this spinous hook first catches and then cuts it, and such a blow he will very frequently give if the line be allowed to slacken. The serrated dorsal spine, which bounds the second ray of that fin, forms also another offensive weapon both against nets and lines, and sometimes the hands of the angler suffer unless he be careful.

Walton also remarks, that—

The barbel affords an angler choice sport, being a lusty and a cunning fish; so lusty and cunning as to endanger the breaking of the angler's line, by running his head forcibly towards any covert, or hole, or bank, and then striking at the line to break it off with his tail; and also so cunning to nibble and suck off your worm close to the hook, and yet avoid the letting the hook come into his mouth.

The barbel is to be found in most of our rivers, as also in those of Middle and Southern Europe. Its most favourite haunts are in currents of moderate rapidity, which flow over gravelly beds and among large stones. These fish are gregarious, and lurk in shoals under the shelter of overhanging banks, or among the weed-beds of deep waters.

Under bridges in the strongest currents they may be seen, and counted one by one, apparently lying as fixtures, which has given rise to the custom of letting down hooks fixed on a lead, which, dropping among them occasionally, fastens one in a *foul* manner, as it is termed. They are unsuspicious in the extreme, and will often suffer themselves while grovelling in the gravel, to be caught up in this way. Piles, weirs, and locks, are likewise favourite resorts of theirs. Barbel are much in motion during the night, at which time they principally seek their food, for which their small penetrating eye gives facilities; and, if our observations are correct, the internal organization of their visual organ particularly fits it for crepuscular vision: that they are gifted with nocturnal vision in an eminent degree is certain, from the readiness with which they distinguish and take a bait during night-fishing. BLAINE.

While the barbel is boring and turning up the loose soil at the bottom of rivers in expectation of finding food for itself, small fish are seen, (according to Mr. Yarrell's observation,) attending it to pick up minute animalculæ in the removed earth.

The barbel varies from two to three feet in length, and from fifteen to eighteen pounds in weight. It spawns in May or June, and is very prolific. Barbel angling is a favourite spot with many, especially in the Thames and in the Lea; but as an article of food this fish is not esteemed: the roe is generally admitted to be poisonous, and cases are recorded where the flesh has produced inconvenient and even dangerous results to those who have eaten it. Other writers say, that both the roe and the flesh may be safely eaten; but we would caution our readers against both. During the spawning season fish are in general unwholesome, and the barbel probably more so than other fish; so that, if eaten at all times of the year, it may have proved injurious at one time and harmless at another, and hence, may have arisen the great diversity of opinion respecting the edible qualities of the barbel.

* "The lateral line, where it exists, as in the more typical groups, deserves much attention: the scales of which it is formed are always of a peculiar construction,—being perforated in the middle for the free issue of that mucous substance which is so prevalent among fish, and which is secreted in certain glands beneath: these scales are generally of a different shape from those of the body; and they have been recently employed by our best ichthyologists as additional aids for discriminating species, which otherwise bear a close resemblance." SWAINSON.

We will conclude our notice of the barbel with an amusing anecdote, related by Sir John Hawkins:—

Fishing for barbel is, at best, but a dull recreation. They are a sullen fish, and bite but slowly. The angler drops in his bait; the bullet, at the bottom of the line, fixes it to one spot of the river. Tired with waiting for a bite, he generally lays down his rod, and, exercising the patience of a setting-dog, waits till he sees the top of his rod move; then begins a struggle between him and the fish, which he calls his sport; and that being over, he lands his prize, fresh baits his hook, and lays in for another.

Living, some years ago, in a village on the banks of the Thames, I was used, in the summer months, to be much in a boat on the river. It chanced that, at Shepperton, where I had been for a few days, I frequently passed an elderly gentleman in his boat, who appeared to be fishing, at different stations, for barbel. After a few salutations had passed between us, and we were become a little acquainted, I took occasion to inquire of him what diversion he had met with. "Sir," says he, "I have had but bad luck to-day, for I fish for barbel, and you know they are not to be caught like gudgeons." "It is very true," answered I, "but what you want in tale, I suppose you make up in weight." "Why, Sir," says he, "that is just as it happens: it is true I like the sport, and love to catch fish, but my great delight is in *going after them*. I'll tell you what, Sir," continued he, "I am a man in years, and have used the sea all my life [he had been an India captain], but I mean to go no more; and have bought that little house which you see there [pointing to it], for the sake of fishing. I get into this boat [which he was then mopping] on a Monday morning, and fish on till Saturday night, for barbel, as I told you, for that is my delight; and this I have done for a month together, and in all that while have not had one bite."

On the wild gorse
Look for the rose of Shiraz, ere ye seek
Knowledge or virtue from the ill-trained sons
Of blind indulgence, luxury, or pride.

MRS. WEST.

THE beginning, and progress, and end of human life resemble the origin, and growth, and decay of a plant. We both of us, at first, arose from one common parent,—the Earth; into which we shall be again resolved. If we are not blasted in the bud of life; or if, through the weakness of the frame and constitution, we are not bowed down again to the ground, still as we grow we are continually exposed to the storms and tempests that beat upon us, and break us down. Or should we be permitted to arrive at our full proportion of strength and height, and escape those diseases which impair our bloom, and those accidents which lie in wait to destroy us, yet in the course of Nature how soon do our organs decay, and the fountains of life dry up, our honours fall from our heads, and we languish, fade, and die!—DR. JOHN TOTTIE.

THE BIBLE.—In every generation, and wherever the light of revelation has shone, men of all ranks, conditions, and states of mind, have found in this volume a correspondent for every movement toward the better felt in their own hearts. The needy soul has found supply, the feeble a help, the sorrowful a comfort; yea, be the recipiency the least that can consist with mortal life, there is an answering grace ready to enter. The Bible has been found a spiritual world,—spiritual, and yet at the same time outward and common to all. You in one place, I in another, all men somewhere or at some time, meet with an assurance that the hopes and fears, the thoughts and yearnings that proceed from, or tend to, a right spirit in us, are not dreams or fleeting singularities, no voices heard in sleep, or spectres, which the eye suffers, but not perceives. As if on some dark night a pilgrim, suddenly beholding a bright star moving before him, should stop in fear and perplexity. But lo! traveller after traveller passes by him, and each, being questioned whither he is going, makes answer, "I am following yon guiding star!" The pilgrim quickens his own steps, and presses onward in confidence. More confident still will he be, if, by the way-side, he should find, here and there, ancient monuments, each with its votive lamp, and on each the name of some former pilgrim, and a record that there he had seen or begun to follow the benignant star!—COLERIDGE.

OPTICAL ILLUSIONS. V.

In our last paper on this subject, we brought before the reader the results of a series of experiments by Dr. Roget, and the very clear explanation which he gives of the causes of an apparent curvature in the spokes of a moving wheel, when seen through a series of parallel apertures. On the present occasion, we will direct our attention to various experiments performed by Professor Faraday as described a few years ago in a scientific journal.

Dr. Faraday notices several instances of phenomena bearing considerable resemblance to those described by Dr. Roget. Happening to be present in a large manufactory, he saw two cog-wheels which were moving with such velocity, that if the eye were retained immoveable, no distinct appearance of the cogs in either could be observed; but upon standing in such a position that one wheel appeared behind the other, the distinct though shadowy resemblance of cogs moving slowly in one direction was immediately seen. He also adduces an instance of a somewhat similar kind, as having been witnessed by Mr. Brunel at the Thames Tunnel. Two small wheels being connected together, an endless rope which passed over and was carried by one of them, immediately returned and passed in the opposite direction over the other, and consequently moved the two wheels in opposite directions with great but equal velocities. When viewed from a particular position, they presented the appearance of a wheel with immoveable radii.

Dr. Faraday, with that manipulative ingenuity which so distinguishes him in matters of science, devised means for illustrating many phenomena of this kind on a small scale. For instance, he suggests a mode of illustrating the phenomenon of the coach wheel, described by Dr. Roget. His plan is, to make a small wheel of pasteboard revolve before a black or dark-coloured ground; and whilst regarding the wheel fixedly, to traverse the space before it with a little barred grating also cut out of pasteboard, By altering the position of the grating and the direction of its motion, it will be seen that the straight lines in the wheel are always parallel to the bars of the grating, and that the convexity of the curved lines is always towards that side of the grating where its motion coincides in direction with the motion of the radii of the wheel. By varying the velocity of the wheel and the position of the grating, the curves present great variety of appearance.

A double wheel often presents a singular appearance. When the two wheels of a gig or carriage in motion are looked at from an oblique position, so that the line of sight crosses the axle; the space through which the wheels overlap appears to be divided into a number of fixed curved lines, passing from the axle of one wheel to the axle of the other. This is shown in an exceedingly pretty manner by the following arrangement, proposed by Dr. Faraday. Cut two equal wheels out of white cardboard, having an equal number of radii, from twelve to twenty or thirty, as in the annexed cut, fig. 1. Insert a large needle through their centres, so as to act as an axle for both, keeping them two or three inches apart. Revolve them between the fingers, and look at them in an oblique direction against a dark or black ground. The radii will then appear to have lost their individual existence, but will present the very curious appearance represented in fig. 2.

When a dark-coloured wheel of a carriage is moving on a light-coloured road, so that the sun shines almost directly on its broadside, and the wheel and its shadow are looked at obliquely, so that the one partly overlaps the other, then, in the overlapping part, luminous or light lines will be perceived curved more or less, and conjoining the axle and its shadow, if the wheel and shadow are superposed sufficiently; or, tending to do so, if they are superposed only in part: the appearance being the more perfect as the motion is more rapid. The mode suggested for imitating this effect, is to make a pasteboard wheel, similar to that described in the last paragraph, to blacken it, to stick it on a pin, and to revolve it in sunshine or in candle-light before a sheet of white paper. An effect similar to that of fig. 3 may be thus produced.

Dr. Faraday contrived a very pretty machine, by which, with slight adjustments, a large variety of effects might be produced, more or less analogous to those which have engaged our attention. As some of our readers might possibly feel inclined to construct such an apparatus for themselves, we will give a representation of it, together with a description of the mode in which it was constructed.

A board was fixed upright upon the middle of another board, serving as a base. The upright board, represented by the framework of fig. 4, was cut so as to leave three vertical stems, one in the middle and two at the ends, forming points of support, which were supplied with little caps made of sheet copper, and bent into the shape of fig. 5. These copper caps, when in their places, furnish four bearings for the support of two axes, one on each side the middle. The axes are small pieces of steel wire tapered at the extremities; each has upon it a little roller or disk of soft wood, which, though it can be moved by force from one part of the axis to another, has still friction sufficient to carry the latter with it when turned round. These axes are made to revolve in the following manner. A circular copper plate about four inches in diameter has three pulleys of different diameter fixed upon its upper surface, whilst its lower surface is covered with a piece of sand-paper attached by cement. A hole is made through the centre of the plate and pulleys, and guarded by a brass tube, so fitted as to move steadily but freely upon an upright steel pin fixed in the middle of the centre wooden support; when the plate is in its place, it rests upon the two middle rollers belonging to the horizontal axes, whilst it is rendered steady by the up right pin. The plate can easily be turned round in a hori zontal plane; and it then causes the two axes with their rollers, through the friction occasioned by the sand-paper, to revolve in opposite directions; and the velocities of these can be made either equal to each other, or to differ in almost any desired ratio, by shifting the rollers upon the horizontal axes nearer to or farther from the centre of the stand.

To produce motions of the axis in the *same* direction, an aperture was cut in the lower part of the upright board; a roller, turned for it, loosely fitted within the aperture; and a steel pin or rod passed as an axis through the roller. The roller hangs in its place by endless lines, made of thread, passing under it, and over little pulleys fixed on the horizontal axes; when, therefore, it is turned by the projecting pin, it causes the revolution of the axes. A variation in the velocities may be obtained by having the roller of different diameters in different parts, and by having pulleys of different dimensions.

This apparatus had to carry wheels either with cogs or spokes, according to the nature of the experiment about to be tried, and the arrangement of the wheels was as follows. The wheels were cut out of cardboard, with a diameter of about seven inches, and were formed with cogs or spokes at pleasure. A piece of cork, such as the end of a phial cork, about the tenth of an inch in thickness, was then fastened by a little soft cement to the middle of the wheel, and a perforation was made through the centre both of the cork and of the cardboard. The wheels could then at any time be put upon the axes, and, being held sufficiently firm by the friction of the cork, turned with them. By these arrangements the axes could be changed, or the wheels shifted, or the velocities altered, with very little trouble.

With such an apparatus as this Dr. Faraday made many curious experiments, all depending, in some degree

Fig. 1.

Fig. 2.

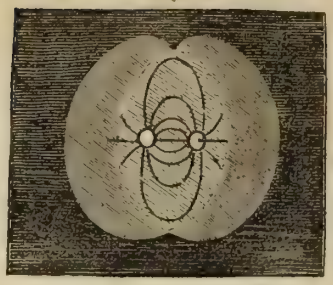


Fig. 3.

Fig. 4.

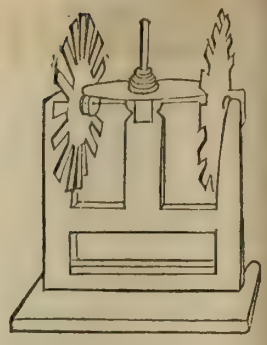


Fig. 5.

or other, on the principles before explained. Two equal cardboard wheels, with sixteen cogs each, were mounted in such a way as to have equal velocities, but in opposite directions. When put into motion, which was easily done by the thumb and finger, applied to the upper pulley of the horizontal copper plate, they presented each the appearance of an uniform tint at the part corresponding to the series of cogs or teeth, provided the eye was so placed as to see the whole of both wheels; but when such a position was chosen for the eye, that the wheels appeared to be superposed, then in place of an uniform tint, the appearance of teeth or cogs was seen,—misty, but perfectly stationary, whatever the degree of velocity given to the wheel. By cutting the cogs or teeth in the wheel nearest to the eye (the left one in the cut), deeper, the eye could be brought nearly into the prolongation of the axes of the wheels, and the phenomenon be seen in great completeness. The number of spectral teeth, if the term may be employed, presented to the eye under these circumstances, was exactly double the number of teeth in either wheel; thus a wheel with twelve teeth produced twenty-four black and twenty-four white alternations, giving the appearance of twenty-four teeth, with an equal number of intervening spaces. When one wheel was made to move a little faster than the other, by shifting the wooden roller on its axis, then the spectrum travelled in the direction of that wheel which had the greater velocity; and the greater the difference between the velocities of the two wheels, the faster did the spectral wheel appear to move. When the wheels were observed in such a direction that they only partially visually superposed each other, the effect took place only in those parts.

In another experiment wheels were fixed on the machine, consisting of radii or spokes, twelve in number, equal in length and width. When revolved alone, each wheel gave, with a certain velocity, a perfectly uniform tint, but when visually superposed there appeared a fixed wheel, having twenty-four spokes, equal in dimensions to the original spokes. Variations of the positions of the eye, or of the relative velocity of the two wheels, caused corresponding differences to occur in the spectral wheel.

In observing these effects Dr. Faraday states that either the wheels should be black or in shade, whilst the part beyond is illuminated, or else that the wheels should be white and enlightened, whilst the part beyond is in deep shade. The cog-wheels present nearly the same appearance in both cases, though in reality the parts of the spectrum which appear darkest by the one method are lightest by the other. The spoke wheels give a spectrum having white radii in the first method, and dark radii in the second. Placing the wheels between the eye and the clouds, on a white wall, or a lunar lamp, answers well for the first method, and for the second, merely reversing the position, and allowing the light to shine on the parts of the wheel towards the eye, whilst the back-ground is black.

In our next paper we shall describe other experiments relating to this singular subject, made by Dr. Faraday, and shall also state the mode in which that philosopher, acquiescing in the opinion of Dr. Roget, explains and accounts for the production of these phenomena.

WHAT a fine moral does Milton inculcate throughout his *Paradise Lost*, by showing that all the weakness and pain of the rebel angels was the natural consequence of their sinning. And it may in general be observed of Milton, that he is scarcely ever so far hurried on by the fire of his muse, as to forget the main end of all good writing, the recommendation of virtue and religion.—THYER.

"IT has always appeared to me," says Dr. Johnson, "as one of the most striking passages in the visions of Quevedo, that which stigmatises those as fools who complain that they failed of happiness by sudden death. Quevedo asks, How can death be sudden to a being who always knew that he must die, and that the time of his death was uncertain?"

THE names of Horeb and Sinai are used interchangeably in the Pentateuch, to denote the mountain on which the Law was given; and this circumstance has naturally occasioned difficulty to commentators. The most obvious and common explanation is, to regard one (Sinai) as the general name for the whole cluster, and the other (Horeb) as designating a particular mountain; much as the same names are employed by the Christians at the present day. So, too, the Arabs now apply the name Jebel-et-Tûr to the whole central granite region; while the different mountains of which it is composed are called Jebel Kâtherin, Jebel Mûsa, &c. On looking at the subjects during our sojourn at the convent, I was led to a similar conclusion; applying the names however differently, and regarding Horeb as the general name and Sinai as the particular one. Two circumstances seem to favour this conclusion. One is, that before and during the march of the Israelites from Egypt to the place where the Law was given, the latter is called only Horeb; just as the Arabs now speak of going from Cairo to Jebel-et-Tûr; while during the sojourn of the Hebrews before the mountain, it is spoken of (with one exception) only as Sinai; and after their departure, it is again referred to exclusively as Horeb. The other and main fact is, that while the Israelites were encamped at Rephidim, Moses was commanded to go on with the elders before the people, and smite the rock in Horeb, in order to obtain water for the camp. The necessary inference is, that some part of Horeb was near to Rephidim; while Sinai was yet a day's march distant.—ROBINSON'S *Palestine*.

THOU Uncreate, Unseen, and Undefined,
Source of all life, and Fountain of the mind,
Pervading Spirit! whom no eye can trace;
Felt through all time, and working in all space,
Imagination cannot paint that spot,
Around, above, beneath, where Thou art not!

R. MONTGOMERY.

LONDON:

JOHN WILLIAM PARKER, WEST STRAND.

PUBLISHED IN WEEKLY NUMBERS, PRICE ONE PENNY, AND IN MONTHLY PARTS, PRICE SIXPENCE.

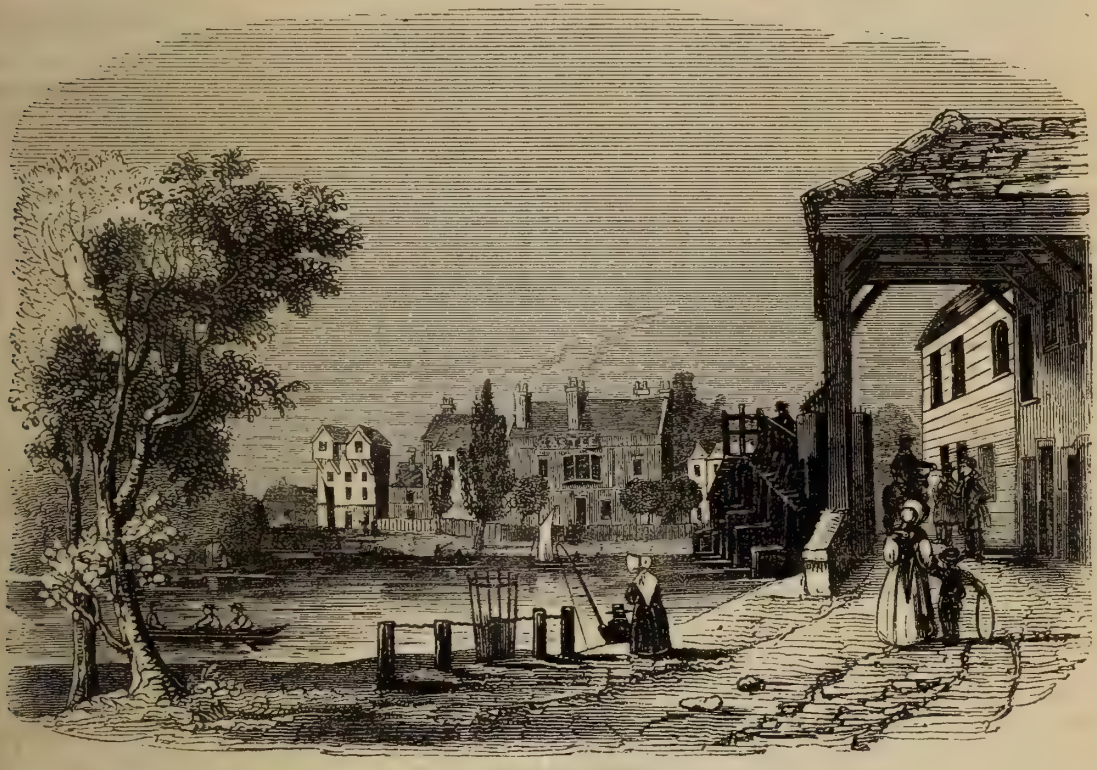
Sold by all Booksellers and Newsvenders in the Kingdom.

THE

Saturday Magazine.

No. 590. SEPTEMBER 11TH, 1841. {PRICE ONE PENNY.

THE BANKS OF THE THAMES. VII.



HAMPTON BRIDGE.

If the reader have an opportunity of looking at a map of the course of the Thames, he will find that the point at which the river Wey enters the Thames is the most southern during its whole course. It is at that point that we resume our tour, between Chertsey and Oatlands.

Between Chertsey Bridge and the Wey, on the Surrey side of the river, is Woburn Park, a beautiful seat, the grounds of which were laid out as a *ferme ornée* by Mr. Southcote, whose talents in that species of gardening were thus apostrophised by Mason in his *English Garden*:—

> On thee too, Southcote, shall the Muse bestow
> No vulgar praise, for thou to humblest things
> Could'st bring ennobling beauties: decked by thee,
> The simple farm eclipsed the garden's pride,
> E'en as the virgin blush of innocence
> The mimicry of art.

Adjoining these grounds is Ham Farm, or Park, through which the river Wey finds its course to the Thames. This tributary, rising on the borders of Surrey, south-west of Haslemere, first takes its course by Liphook, in Hampshire: again entering Surrey it runs eastward to Godalming and Guildford, having been joined at Shalford by a stream which rises in the commons to the south of Wotton, and which, though small, supplies a great number of mills, besides embellishing many pleasure-grounds in its course. From Guildford the Wey passes north-eastward to Woking, leaves the town at a small distance on the north-west, then proceeds to Weybridge, to which place it gives name, and there discharges itself into the Thames.

Eastward of Weybridge, and following the curvature of the river for some distance, is the manor of Oatlands, once belonging to the late Duke of York, and remarkable for the many hands into which it has passed. Before the time of Henry the Eighth it belonged to the family of Rede, one of the members of which exchanged it with the monarch for the manor of Tanbridge, in the same county. While royal property it was at intervals the residence of some branches of the royal family. Queen Elizabeth occasionally visited it; Ann, consort of James the First, here built a room called the silk-worm room. Charles the Second settled this manor on his mother, Henrietta Maria, for her life. The mansion had been much injured during the civil wars, and after the death of the queen, Charles granted a lease of it to the Earl of St. Albans. It next passed into the possession of Lord Chief-Justice Herbert, upon whose attainder it was granted to the Earl of Torrington. The next possessor and occupant was the Duke of Newcastle, from the descendant of whom the Duke of York purchased Oatlands.

We must now cross the Thames, and view the little village of Shepperton, the retreat of many an adherent of Izaak Walton. The quiet and serene beauties of the neighbourhood are well calculated for the mind of such a man as "honest Izaak," who learned the art of angling on the banks of the Thames, and whose *Angler's Wish*

points out the spots, the employments, and the associations which delighted him.

I in these flowery meads would be:
These crystal streams should solace me,
To whose harmonious bubbling noise
I with my angle would rejoice.
Or, on that bank, feel the west wind
Breathe health and plenty, please my mind,
To see sweet dew-drops kiss these flowers,
And then washed off by April showers:
Here hear my Kenna sing a song;
There see a blackbird feed her young,
Or a laverock build her nest:
Here give my weary spirits rest,
And raise my low-pitched thoughts above
Earth, or what poor mortals love:
Thus free from law-suits, and the noise
Of princes' courts, I would rejoice,
Or with my Bryan and a book
Loiter long days near Shawford brook;
There sit by him and eat my meat,
There see the sun both rise and set;
There bid good morning to next day,
There meditate my time away
And angle on, and beg to have
A quiet passage to a welcome grave.

While speaking of this prince of anglers, we may remark that the Thames, near the spot at which we have now arrived, abounds with almost every different species of fish that is to be found in other British rivers, such as perch, eels, roach, dace, bleak, barbel. The roach, it is said, are never seen below London bridge; the others are found as low as the water continues fresh. Flounders are seldom found above Fulham, whither they are conveyed by the tide. The salmon appears in the river about the middle of February, its capture being prohibited during certain of the autumnal and winter months. The shad, like the salmon, is a fish of passage: it appears about the beginning of June, the usual weight being from four to five pounds.

Again we cross to the Surrey side of the river, and pay a passing visit to the town of Walton. It has been stated, but on what grounds we do not know, that Walton was formerly in the county of Middlesex, but that, three or four hundred years ago, the old channel of the Thames was changed by an inundation, by which also a church was destroyed. At about a furlong above the bridge, at Walton, is a place called Cowey Stakes, where, according to some authorities, Cæsar passed the Thames. Stout stakes, driven into the bed of the river at this place, have been a source of much conjecture and discussion. Bede stated that the Britons had stationed themselves on the other side of the river, and had fenced the bank with sharp stakes, securely driven into the ground: these stakes he describes as being as thick as a man's thigh, and as being soldered or pointed with lead at the bottom, as if to make them penetrate more easily into the ground. It has, however, been justly observed by others that the object of driving these stakes could hardly have been the prevention of Cæsar's attempt to cross the river, since the stakes range directly across from bank to bank. Others have supposed that they are merely remains of a fishing-weir. Mr. Bray, the historian of Surrey, was informed by a fisherman, who had lived at Walton, and known the river all his life, that at this place he had taken up several stakes, of the thickness of his thigh, about six feet long, shod with iron, the wood very black, and so hard as to turn the edge of an axe. Mr. Speaker Onslow had a set of knife and fork handles made from them, which, when worked, were as black, hard, and heavy, as ebony. Whatever might have been the purpose for which these stakes were driven into the river, the remains of Roman camps in the neighbourhood seem to afford some support to the opinion that this was the spot at which Cæsar crossed the river.

Near Walton are the beautiful grounds of Paine's Hill, long celebrated for the skill with which they were laid out by their proprietor, the Hon. Charles Hamilton. A considerable part of these grounds on the north side was taken from the barren heath; the south side was a bank above the river Mole, which runs at the foot of it. Availing himself of the inequalities of the land, he made his plantations and placed his buildings with the utmost judgment, and formed a spacious piece of water, which, though considerably above the bed of the river, is supplied from it by a simple but ingenious contrivance. Horace Walpole, in his *Observations on Gardening*, speaks with much commendation of these grounds. He distinguishes—

Three kinds of gardens,—the garden which connects itself with the park, the ornamental farm, and the forest or savage garden, by which I mean that kind of Alpine scenery, composed almost wholly of pines and firs, a few birch, and such trees as assimilate with a savage and mountainous country. Mr. Charles Hamilton, at Paine's Hill, has in my opinion given a perfect example of this mode in the utmost boundary of his garden. All is great and foreign and rude, the walks seem not designed, but cut through the wood of pines, and the style of the whole is so grand, and conducted with so serious an air of wild and uncultivated extent, that when you look down on this seeming forest, you are amazed to find only a few acres.

The church at Walton contains the tombs of several persons of some notoriety, among whom is William Lilly, the Astrologer. In the chancel are preserved several brass plates, which serve to record a very singular feat of activity. They appear to have been once laid over a grave stone. On one of these plates, John Selwyn, his wife, and eleven children, are represented in a praying posture: on another plate he is seen seated on the back of a stag, holding by one of the animal's horns with his left hand, and plunging a sword into its neck with his right. It appears, from a black-letter inscription, that this John Selwyn was under-keeper of the park at Oatlands, in the reign of Queen Elizabeth: the bugle-horn, the badge of his office, is apparent on the plates. This man, according to a tradition which seems to be supported by the testimony of the monument, was extremely famous from his strength, agility, and skill in horsemanship, specimens of all of which he exhibited before the queen, at a grand stag-hunt in that park. While attending at the hunt, as was the duty of his office, he, in the heat of the chase, suddenly leaped from his horse, upon the back of the stag, both running at the same time with the utmost speed, and not only kept his seat gracefully, in spite of every effort of the affrighted beast, but, drawing his sword, guided him with it towards the queen, and when near to her, plunged it into his throat, so that the stag fell dead at her feet.

Proceeding down the river from Walton, the view on either side is bounded by the osiers with which its banks are thickly covered, till the elegant village of Sunbury appears, presenting a long range of fine domestic structures, among which Sunbury Place, at its eastern extremity, is seen to great advantage from the river. This mansion, some years ago the residence of the Hon. Percy Wyndham, has four fronts, with a pavilion at each corner. The grounds are extensive, and the pleasure-lawn and plantations disposed with considerable taste and judgment. The ornamental dwellings of this handsome village are not confined to the margin of the river. The road leading northward to the common is bordered by many detached villas, with good continuous pleasure-grounds, and such likewise occur in other parts of the parish. Kempton Park contains an extensive mansion, built, in imitation of the Gothic style, by the late Mr. Hill, proprietor of the gunpowder mills on Hounslow Heath. On this domain stood a palace of our early kings, of the existence of which no tradition remains, though an inquisition, taken by order of Edward the Third, in 1331, and preserved among the records of

he Tower, describes it as having fallen into a dangerous tate of dilapidation, and it was probably demolished at hat time to save the expense of repairs.

The tourist next reaches Hampton Bridge, with the illage of Hampton adjoining. In the reign of Edward he Confessor, Hampton belonged to Earl Algar, a owerful Saxon nobleman, and after the Norman Conuest it was held by Walter de St. Valeri, who probably ave the advowson of the living to the priory of Takely, n Essex, which was a cell to the abbey of St. Valeri, in Picardy, but the manor subsequently became the property f Sir Robert Gray, whose widow, in 1211, left it to the Knights Hospitallers, and they at one period had an stablishment here for the sisters of that order. Three enturies afterwards it passed into the hands of the Crown, under circumstances which we shall detail when escribing Hampton Court Palace.

The village of Hampton stands about one mile and a alf from the palace, on the north side of the Thames. t contains several handsome villas, particularly one hich belonged to the celebrated Garrick, on the lawn n front of which is a small temple dedicated to Shakpere. Hampton Court Bridge, which is of wood, has a ght and pleasing effect. There is also a ferry over the iver at the village of Hampton, for carriages and footassengers.

By far the most attractive object at or near Hampton Hampton Court Palace, a description of which we nust defer to our next paper.

THE PATAGONIANS.

Captain King, of H.M.S. *Adventure*, was engaged, ith the expedition under his direction, for several years n surveying the southern shores of South America. The *Adventure* and the *Beagle* entered the Strait of Magalhaens (commonly called Magellan,) in the latter nd of December, 1826. This was, of course, the ummer season of these regions. Captain King thus lescribes his first interview with the Patagonians.

In the evening an Indian was observed on horseback iding to and fro upon the beach, but the weather prevented ny sending a boat until the next morning, when Lieut. Cooke went on shore to communicate with him and other ndians who appeared, soon after dawn, upon the beach. On anding, he was received without the least distrust. They vere eight or ten in number, consisting of an old man and is wife, three young men, and the rest children, all nounted on good horses. The woman, who appeared to be bout fifty years of age, was seated astride upon a pile of kins, hung round with joints of fresh guanaco meat* and ried horseflesh. They were all wrapped in mantles, made hiefly of the skins of guanacoes. These mantles were arge enough to cover the whole body. Some were made of kins of the zorillo, or skunk, an animal like the pole-cat, ut ten times more offensive; and others, of skins of the uma.

The tallest of the Indians, excepting the old man, who id not dismount, was rather less than six feet in height. ll were robust in appearance, and with respect to the head, ength of body, and breadth of shoulders, of gigantic size; herefore, when on horseback, or seated in a boat, they ppeared to be tall, as well as large men. In proportion to he parts above-mentioned, their extremities were very small nd short, so that when standing they seemed but of moderate size, and their want of proportion was concealed by the antle, which enveloped the body entirely, the head and et being the only parts exposed.

When Mr. Cooke landed, he presented some medals (proided for the purpose of giving away to the Indians,) to the dest man, and the woman: and suspended them round heir necks. A friendly feeling being established, the atives dismounted, and even permitted our men to ride heir horses, without evincing the least displeasure at the ee advantage taken of their good nature.

Mr. Cooke returned to the ship with three natives, whom e had induced to go with us to Elizabeth Island; the others were to meet them and provide us with guanaco meat, to which arrangement the elders of the family had, after much persuasion, assented. At first they objected to their companions embarking with us, unless we left hostages for their safety; but as this was refused they did not press the point, and the three young men embarked. They went on board singing, in high glee.

While the ship was getting under way, I went ashore to a large number of Indians, who were waiting on the beach. When my boat landed they were mounted and collected in one place. I was surprised to hear the woman accost me in Spanish; of which, however, she knew but a few words. Having presented medals to each of the party, they dismounted (excepting the elders), and in a few minutes became quite familiar. By this time Capt. Stokes had landed, with several of his officers, who increased our party to nearly double the number of theirs; notwithstanding which they evinced neither fear or uneasiness. The woman, whose name was Maria, wished to be very communicative; she told me that the man was her husband, and that she had five children. One of the young men, whom we afterwards found to be a son of Maria, who was a principal person of the tribe, was mounted upon a very fine horse, well groomed, and equipped with a bridle and saddle that would have done credit to a respectable horseman of Buenos Ayres or Monte Video. The young man wore heavy brass spurs, like those of the Guacos of Buenos Ayres. The juvenile and feminine appearance of this youth made us think he was Maria's daughter, nor was it until a subsequent visit that our mistake was discovered. The absence of whiskers and beard gives all the younger men a very effeminate look, and many cannot be distinguished in appearance from the women, but by the mode in which they wrap their mantles around them, and by their hair, which is turned up and confined by a fillet of worsted yarn. The women cross their mantle over the breast like a shawl, and fasten it together with two iron pins or skewers, round which are twisted strings of beads and other ornaments. They also wear their hair divided, and gathered into long tresses or tails, which hang one before each ear; and those who have short hair, wear false tails made of horse-hair. Under their mantle the women wear a sort of petticoat, and the men a triangular piece of hide instead of breeches. Both sexes sit astride, but the women upon a heap of skins and mantles when riding. Both sexes wear boots made of the skins of horses' hind legs, of which the parts about the hock-joints serve for the heels.

The only weapons which we observed with these people were the bolas, or balls, precisely similar to those used by the Pampas Indians; but they are fitter for hunting than for offence or defence. Some are furnished with three balls, but, in general, there are only two. These balls are made of small bags or purses of hide, moistened, filled with iron pyrites, or some other heavy substance, and then dried. They are about the size of a hen's egg, and attached to the extremities of a thong, three or four yards in length. To use them, one ball is held in the hand, and the other swung several times round the head until both are thrown at the object, which they rarely miss. They wind round it violently, and, if it be an animal, throw it down. The bolas, with three balls, similarly connected together, are thrown in the same manner.

As more time could not be spared, we went on board.—The wind having been very strong and against the tide, the ship had much motion, which made our Patagonian passengers very sick. The next day, the wind proved contrary, and the Patagonians showed much uneasiness at being kept on board so much longer than they expected; but, as they seemed to understand the cause of their detention, and as their sickness ceased when we reached smooth water, they gradually recovered their good humour, and became very communicative. As well as we could understand their pronunciation, their names were Cojgh, Coichi, and Aighen. The Indians of Tierra del Fuego, with whom they are not on friendly terms, are designated by them Sapallios. This name was applied to them in a contemptuous manner.

Aighen's features were remarkably different from those of his companions. Instead of a flat nose, his was aquiline and prominent, and his countenance was full of expression. He proved to be good-tempered and easily pleased; and whenever a shade of melancholy began to appear, our assurance of landing him on the morrow, restored his good humour, which was shown by singing and laughing.

Coichi's head was long and flat, at the top; the forehead

* The flesh of the guanaco, or llama; which may be termed the camel of South America.

broad and high, but covered with hair within an inch and a half of the eyebrow, which had scarcely any hair. The eyes were small, the nose was short, the mouth wide, and the lips thick. Neck short, and shoulders very broad. The arms were short, and wanting in muscle, as were also the thighs and legs. The body was long and large, and the breast broad and expanded; his height nearly six feet.

The next day we rounded Elizabeth Island, and reached Cape Negro, where we landed the Indians, after making them several useful presents, and sending some trifles by Aighen to Maria, who, with her tribe, had lighted large fires about the country behind Peckett's Harbour, to invite us to land. Our passengers frequently pointed to them, telling us that they were made by Maria, who had brought plenty of guanaco meat for us.

In the following May the *Adventure* was again in the same neighbourhood.

After the gale had abated, we proceeded with fair weather and a light breeze to the Second Narrow, when the wind fell; but the tide being in our favour we passed rapidly through. On a hill near us we observed three or four Patagonian Indians standing together, and their horses feeding close to them. A fire was soon kindled, to attract our notice, to which signal we replied by showing our colours; and had we not already communicated with these people, we should certainly have thought them giants, for they "loomed very large" as they stood on the summit of the hill. This optical deception must doubtless have been caused by mirage: the haze has always been observed to be very great during fine weather and a hot day, arising from rapid evaporation of the moisture so abundantly deposited on the surface of the ground, in all parts of the Strait.

As soon as the Patagonians found they were noticed, they mounted, and rode along the shore abreast of us, being joined by other parties, until the whole number could not have been less than forty. Several foals and dogs were with them. Having anchored in Gregory Bay, where I intended remaining for two days to communicate with them, I sent up a rocket, burnt a blue light, and dispatched Lieutenant Cooke on shore to ask for a large supply of guanaco meat, for which we would pay in knives and beads. The boat returned on board immediately, bringing four natives, three men, and Maria. This rather remarkable woman must have been, judging by her appearance, about forty years old; she is said to have been born at Assuncion, in Paraguay, but I think the place of her birth was nearer Buenos Ayres. She spoke broken, but intelligible, Spanish, and stated herself to be sister of Bysante, the cacique of a tribe near the Santa Cruz River, who is an important personage, on account of his size (which Maria described to be immense,) and his riches. In speaking of him, she said he was *very* rich; he had many mantles, and also many hides ("*muy* rico, tiene muchas mantas y tambien muchos cueros.") One of Maria's companions, a brother of Bysante, was the tallest and largest man of this tribe; and though he only measured six feet in height, his body was large enough for a much taller man. He was in great affliction; his daughter had died only two days before our arrival; but, notwithstanding his sad story, which soon found him friends, it was not long before he became quite intoxicated, and began to sing and roar on the subject of his misfortunes, with a sound more like the bellowing of a bull than the voice of a human being. Upon applying to Maria, who was not quite so tipsy as her brother, to prevent him from making such hideous noises, she laughed and said, "Oh, never mind, he's drunk, poor fellow! his daughter is dead," (Es boracho, povrecito, murio su hija); and then, assuming a serious tone, she looked towards the sky, and muttered in her own language a sort of prayer or invocation to their chief demon, or ruling spirit, whom Pigafetta, the companion and historian of Magalhaens, called *Setebos*, which Admiral Burney supposes to have been the original of one of Shakspeare's names in the *Tempest*:—

> . . . . . His art is of such power,
> He could control my dam's god Setebos.

Maria's dress was similar to that of other females of the tribe; but she wore ear-rings, made of medals stamped with a figure of the Virgin Mary, which with the brass pin that secured her mantle across her breast, were given to her by one Lewis, who had passed by in an American sailing vessel, and who, we understood from her, had made them "Christians."

I accompanied Maria to the shore. On landing, she conducted me to the place where her family were seated round her property. They consisted of Manuel, her husband, and three children, the eldest being known by the appellation of Capitan Chico, or "Little Chief." A skin being spread out for me to sit on, the family and the greater part of the tribe collected around. Maria then presented me with several mantles and skins, for which I gave in return, a sword, remnants of red baize, knives, scissors, looking-glasses, and beads: of the latter I afterwards distributed bunches to all the children, a present which caused evident satisfaction to the mothers, many of whom also obtained a share. The receivers were selected by Maria, who directed me to the youngest children first, then to the elder ones, and lastly to the girls and women. It was curious and amusing to witness the order with which this scene was conducted, and the remarkable patience of the children, who, with the greatest anxiety to possess their trinkets, neither opened their lips, nor held out a hand, until she pointed to them in succession.

Having told Maria that I had more things to dispose of for guanaco meat, she dismissed the tribe from around me, and, saying she was going for meat, mounted her horse, and rode off at a brisk pace.

On her return, with a very small quantity of guanaco meat, her husband told her that I had been very inquisitive about a red baize bundle, which he told me contained "Cristo," upon which she said to me, "Quiere mirar mi Cristo?" (Do you wish to see my Christ?) and then, upon my nodding assent, called around her a number of the tribe, who immediately obeyed her summons. Many of the women, however, remained to take care of their valuables. A ceremony then took place. Maria, who by the lead she took in the proceedings, appeared to be high priestess as well as cacique of the tribe, began by pulverising some whitish earth in the hollow of her hand, and then taking a mouthful of water, spat from time to time upon it, until she had formed a pigment, which she distributed to the rest, reserving only sufficient to mark her face, eyelids, arms, and hair with the figure of the cross. The manner in which this was done was peculiar. After rubbing the paint in her left hand smooth with the palm of the right, she scored marks across the paint, and again others at right angles, leaving the impression of as many crosses, which she stamped upon different parts of her body, rubbing the paint and marking the crosses afresh, after every stamp was made.

The men, after having marked themselves in a similar manner (to do which some stripped to the waist, and covered all their body with impressions), proceeded to do the same to the boys, who were not permitted to perform this part of the ceremony themselves. Manuel, Maria's husband, who seemed to be her chief assistant on the occasion, then took from the folds of the sacred wrapper an awl, and with it pierced either the arms or ears of all the party, each of whom presented in turn, pinched up between the finger and thumb, that portion of flesh which was to be perforated. The object evidently was to lose blood, and those from whom the blood flowed freely showed marks of satisfaction, while some whose wounds bled but little underwent the operation a second time.

When Manuel had finished he gave the awl to Maria, who pierced his arm, and then, with great solemnity and care, muttering and talking to herself in Spanish, (not two words of which could I catch, although I knelt down close to her, and listened with the greatest attention,) she removed two or three wrappers, and exposed to our view a small figure, carved in wood, representing a dead person, stretched out. * * * * * Each family possesses its own household god, a small wooden image, about three inches in length, the rough imitation of a man's head and shoulders, which they consider as the representative of a superior being, attributing to it all the good or evil that happens to them.

A GENTLEMAN, who had recently become known to the bishop, asked me one day to let him look into a copy of the *Protestant Kempis*. He opened the volume at p. 269, and, pointing to a note at the foot of the page, he observed that "he knew a family, which had been led to study the works of Bishop Taylor, (whom previously they had known only by name,) by that single note of Bishop Jebb." His quotation made so deep an impression, that the family in question procured Taylor's works on the strength of it; and had since become intimately conversant with his writings. The anecdote is a proof of the service which may be rendered, in a line or two, where taste and judgment are directed to the promotion of good. This one quotation was, probably, more effective than the most laboured panegyric.—FORSTER'S *Life of Bishop Jebb*.

THE HAWK-MOTH.

The helpless crawling caterpillar trace
From the first period of his reptile race;
Clothed in dishonour, on the leafy spray
Unseen, he wears his silent hours away,
Till satiate grown of all that life supplies,
Self taught the voluntary martyr dies.
Deep under earth his darkling course he bends,
And to the tomb a willing guest descends:
There long secluded in his lonely cell
Forgets the sun, and bids the world farewell:
O'er the wide waste the wintry tempests reign.
And driving snows usurp the frozen plain:
In vain the tempests beat, the whirlwind blows.
No storms can violate his grave's repose.
But, when revolving months have won their way,
When smile the woods, and when the zephyrs play,
When laughs the vivid world in Summer's bloom,
He bursts and flies triumphant from the tomb;
And while his new-born beauties he displays,
With conscious joy his altered form surveys;
Mark while he moves amid the sunny beam,
O'er his soft wings the varying lustre gleam;
Launched into air on purple plumes he soars,
Gay natures face with wanton glance explores,
Proud of his various beauties wings his way,
And spoils the fairest flowers, himself more fair than they!
And deems weak man the future promise vain,
When worms can die, and glorious rise again?

Sphinx Nerion

THE Sphinxes, or Hawk-moths, belong to a very interesting family of lepidopterous* insects; which family has been named Crepuscularia, from the circumstance that many of the species are observed chiefly during the morning and evening twilight. These insects are distinguished by the antennæ, which are prismatic or fusiform, and usually thickest in the middle. Their colours are in general agreeably varied, the under wings being often banded. They fly with great strength and celerity, owing to the extent and firm consistence of their wings, the powerful muscles by which they are moved, and the bird-like manner in which their taper bodies are poised. During flight they produce a strong humming noise, occasioned by the rapid vibration of these wings, which renders their approach easily perceptible. Instead of settling upon flowers, like bees and other insects, they are frequently observed merely to hover over or before them, and to extend their long tubular trunks towards the nectaries. This peculiar hovering motion has obtained for them the appellation of *Hawk-moths*. The motions of one of these insects is beautifully described by Miss Mitford, who, in noticing her garden, traces "the gay gambols of the common butterflies, as they sport around the dahlias, or watches that rarer moth, which the country-people, fertile in pretty names, call the bee-bird; that bird-like insect which flutters in the hottest days over the sweetest flowers, inserting its long proboscis into the small tubes of the jasmine, and hovering over the scarlet flowers of the geranium, whose bright colour seems reflected on its own feathery breast; that insect which seems so thoroughly a creature of the air, never at rest, always when feeding self-poised and self-supported. and whose wings in their motion have a sound so deep, so full, so lulling, and so musical; nothing so pleasant as to sit amid that mixture of the flower and the leaf, watching the bee-bird."

The caterpillars of these moths vary greatly in their forms, especially in the fore-part of the body. In some this part is susceptible of great elongation, like the trunk of an elephant, whence those species are called elephant hawk-moths. This motion is effected when the insect is feeding or seeking food, at which time the neck assumes a narrow conical form, truncated in front, the head and face forming the truncated part; when in repose they withdraw this elongation. Other species elevate the fore-part of the body, while the rest of the body is applied flat to the surface on which it rests, which posture, resembling that of the Egyptian sphinx, has furnished a name to the insects. In some the skin is of so tough or flexible a texture, as to be capable of bearing great pressure without injury. Bonnet pressed the grub of the privet hawk-moth under water, till it was as flat and empty as the finger of a glove, yet within an hour it became plump and lively, as if nothing had happened. These caterpillars have also a horn on the eleventh ring, directed backwards, and a little curved. This, from its figure and direction, has been supposed an offensive or defensive weapon; but no one has observed the insect make use of it for such purposes. Besides, though called a horn, it is of a fleshy substance, and too soft to inflict any injury.

The caterpillars of the hawk-moths are smooth, and furnished with sixteen legs, the ten posterior being called pro-legs†; they are of cylindric form. They live solitarily, and feed on the leaves of vegetables. They are at first very active, and when disturbed, fall from the leaf upon which they were placed, suspending themselves by a thread; when more aged they become sluggish. They undergo the chrysalis state and make their cocoons in the earth, or upon its surface covered with leaves. The chrysalis state generally lasts seven or eight months.

One of the most elegant insects of this genus is the *Sphinx Ligustri*, or Privet hawk-moth. It is a large insect, measuring nearly four inches and a half from wing's end to wing's end; the upper wings are of a brown colour most elegantly varied or shaded with deeper and lighter streaks and patches; the under wings and body are of a fine rose colour, barred with transverse black stripes. The caterpillar, which is very large, is smooth, and of a fine green, with seven oblique purple and white stripes along each side; and furnished at the hinder part with the horn referred to above. This beautiful caterpillar is often found in the months of July and August feeding on the privet, the lilac, the poplar, and some other trees, and generally changes to a chrysalis in August or September, retiring for that purpose to a considerable depth beneath the surface of the ground, and after casting its skin, continuing during the whole winter in a dormant state, the sphinx emerging from it in the succeeding June.

Sphinx ocellata is perhaps still more beautiful: it is rather smaller than the preceding: the body is brown, as also the wings, which are finely clouded with different shades, while the lower wings are of a bright rose colour, each marked with a fine ocellated black spot, with a blue

* The insects of this order were named by Linnæus LEPIDOPTERA, or *winged with scales;* that is, the wings are covered with imbricated scales or feathers, presenting to the naked eye only the appearance of mere particles of dust or powder, but exhibiting under the microscope a regular series of scales or feathers, peculiar, as to shape or size, to each species.

† Those caterpillars which spin silk, often escape a fall or elude danger by means of the silken line which they produce. With this line they often drop through a space of several feet, and frequently disappoint a bird that has marked them out for a prey. When the danger is over, the caterpillar returns to its former situation by climbing its silken cable, for which purpose its fore-legs are furnished with a curved claw; while the pro-legs, as they are called, are well adapted for holding it firm to the branch when it has regained it, the pro-legs being constructed on the principle of forming a vacuum, like the leather sucker with which boys lift and drag stones. So difficult is it to remove a caterpillar from a branch without injury, that collectors usually cut off the branch and bear the insect away upon it.

interior circle, and a black centre. This insect proceeds from a green caterpillar of a rough or shagreen-like surface, marked on each side by seven oblique yellowish-white streaks, and furnished like the preceding with a horn at the tail. It is principally found on the willow; it retires underground in August or September to undergo its changes, and re-appears in the following June as a perfect insect.

The most remarkable of all European insects of this genus is the *Sphinx Atropos* of Linnæus. This is larger than the two former; the upper wings are of a fine dark grey, with slight markings of orange and white; the under wings are bright orange, marked by a pair of transverse black bands: the body is also orange-coloured, marked at the sides with black bars, while along the top of the back from the thorax to the tail runs a broad blue-grey stripe: on the top of the thorax is a very large patch, of a most singular appearance, exactly resembling the usual aspect of a skull, or death's head; it is of a pale grey, varied with dull ochre colour and black. This peculiar appearance has given to the insect the name of the Death's-head moth, a figure of which may be seen by referring to *Saturday Magazine*, Vol. I., p. 69, with some ingenious remarks thereon by the author of the *Journal of a Naturalist*.

When in the least disturbed or irritated, this insect emits a stridulous sound, something like the squeaking of a bat or mouse, and from this circumstance, as well as the symbol of mortality which is impressed upon it, it is held in much dread by uneducated persons in several parts of Europe, its appearance being regarded as a kind of ill omen, or harbinger of approaching fate. We are informed by the celebrated Reaumur, that the members of a female convent in France were thrown into great consternation by the appearance of one of these insects, which happened to fly in during the evening at the door of the dormitory. A number of these insects appeared some years ago in the province of Bretagne to the great terror of the peasants, who believed them to be the cause of certain epidemic maladies, which then prevailed in that country. In the Isle of France the natives believe that the dust cast from the wings of this insect in flying through an apartment, is productive of blindness to the visual organs on which it falls.

The caterpillar from which this curious sphinx proceeds, is in the highest degree beautiful, and far surpasses in size every other European insect of the kind. It sometimes measures nearly five inches in length, and is of considerable thickness: its colour is bright yellow; the sides are marked by a row of seven most elegant broad stripes or bands of a mixed violet and sky-blue colour; the tops of these bands meet on the back in so many angles, and are varied on that part with jet-black spots: it is furnished with the usual horny appendage on the last joint.

This caterpillar is principally found on the potato and the jasmine, these plants being its favourite food. It usually changes into a chrysalis at the latter end of the month of August, and the complete insect emerges in the following month: but some individuals have been observed to remain unchanged till the following summer.

S. hippophaes is an inhabitant of Dauphiny: the larva, either to avoid the glare of light, or the attacks of enemies, conceals itself during the day beneath the dead leaves at the roots of trees, and emerges only at night for the purpose of seeking food.

The sphinx affords a striking emblem of the change which we ourselves shall undergo, when our present life has terminated. When the first period of the insect's life has passed, it retires to the earth, and there remains buried during several months; it then rises to the surface, and bursting from the confinement of its tomb, commences a being of powers comparatively so exalted, and of beauty so superior, as not to be beheld without the highest admiration.

The plan of nature, in creating these sylph-like inhabitants of air is wonderful indeed. Who could ever pre-suppose that so lively, delicate, and brilliant an insect as a butterfly, so airy in its habits, and so fastidious in its food, should be derived from a crawling, voracious worm? The butterfly, on issuing from its cocoon, is entirely formed. Nothing of its prior state remains. Its figure, its habits, all, in a word, is so changed, that it can no longer be recognised. The butterfly is agility itself, and grace personified. It appears to disdain the earth, and in its magnificent robe to seek the skies, while it is sustained with nectar like the fabled divinities of old. Issuing from its dark cradle, it seems to rejoice in its new-born existence, to court the sunbeam, or delight in recognising the groves or fields where its laborious infancy had been passed. Its life is now a scene of perpetual enjoyment. It wanders from flower to flower, continually in pursuit of the pleasures of novelty and change.—GRIFFITH'S CUVIER.

IN March last, as I was repairing to the native village of Bustem, to survey a bridge which was thrown across the road, on my route from the station of Jellasore, on crossing the Soubunreeka river, my attention was attracted to a number of human skeletons, which lay scattered in various directions upon the white sands adjacent to the course of the stream. Upon inquiry I learned that these unfortunate relics were the remains of pilgrims who were on their road to the great pagoda of Juggernaut, and had been drowned two evenings before by means of a ferry-boat sinking with them during a violent north-wester. On my approaching several of these sad vestiges of mortality, I perceived that the flesh had been completely devoured from the bones by Pariah dogs, vultures, and other obscene animals. The only portion of the several corpses I noticed that remained entire and untouched were the bottoms of the feet and the insides of the hands, and this extraordinary circumstance immediately brought to mind that remarkable passage recorded in the Second Book of Kings, relating to the death and ultimate fate of Jezebel, who was, as to her body, eaten of dogs, and nothing remained of her but the "palms of her hands and the soles of her feet." The former narrative may afford us corroborative proof of the rooted antipathy that the dog has to prey upon the human hands and feet. Why such should be the case remains a mystery.—*From an Indian Correspondent of the Times.*

ON all sides, are we not driven to the conclusion that, of the things which man can do or make here below, by far the most momentous, wonderful, and worthy are the things that we call Books! Those poor bits of rag-paper, with black ink on them, from the daily newspaper to the sacred Hebrew BOOK, what have they not done! what are they not doing! For, indeed, whatever be the outward form of the thing, (bits of paper, as we say, and black ink) is it not verily, at bottom, the highest act of man's faculty that produces a book? It is the *Thought* of man,—the true thaumaturgic virtue, by which man works all things whatsoever. All that he does, and brings to pass, is the vesture of a Thought. This London City, with all its houses, palaces, steam-engines, cathedrals, and huge immeasurable traffic and tumult, what is it but a thought,—but millions of thoughts made into one,—a huge immeasurable spirit of a THOUGHT, embodied in brick, in iron, smoke, dust, palaces, parliaments, Hackney coaches, Katherine Docks, and the rest of it! Not a brick was made but some man had to *think* of the making of that brick. The thing we called "bits of paper with traces of black ink" is the *purest* embodiment a thought of man can have. No wonder it is, in all ways, the activest and noblest.—CARLYLE.

DURING the preceding year Tuweilib had spent a fortnight in and near the great plain el-Kâ'a, not far from Mount Serbâl, pasturing his camels, without a drop of water for himself or them. He drank the milk of the camels; and they, as well as sheep and goats, when they have fresh pasture, need no water. In such a case they will sometimes go for three or four months without it. Others had told us that the camel needs water once in every three days in summer, and every five days in winter, but this is probably when the pastures are dry, or when they are fed on provender.—ROBINSON'S *Palestine.*

MAPS AND MAPPING. I.

Progress of Map-Making.—Ancient Maps.—Maps of the Middle Ages.

O'er the map my finger taught to stray,
Cross many a region marks the winding way;
From sea to sea, from realm to realm I rove,
And grow a mere geographer by love.

Among the many concerns which engage the intellectual attention both of those who tarry at home and those who travel abroad, whether for business or pleasure, Maps are of essential importance. As the latter travel in reality, so the former may accompany them in imagination, and picture up the scenes which they describe. We propose, therefore, to furnish in this paper, for the general benefit of our readers, a concise detail of the *history* of maps, and, in two succeeding articles, a brief account of the principles on which they are usually constructed.

The word "Map" seems to have been derived from the Latin *mappa*, a table-napkin, which, in the public games of the Roman circus was hung out at the prætor's, or other great magistrate's seat, as a signal for the race, or other diversions, to begin. The mappa was received for this purpose by the *mapparius*, from the consul, prætor, or other great officer. Notice was anciently given by sound of trumpet, but Nero is said to have introduced the mappa, by throwing his napkin out of the window, to satisfy the people, who grew noisy at the delay of the sports while he was at dinner.

Without entering at present into a scientific definition of our subject, we may just state that maps have been ordinarily understood to be plane drawings, meant to represent the form, extent, position, and other particulars of the various countries of the earth. Such maps as have been intended to delineate more particularly the ocean, or any part of it, have commonly borne the name of "Charts."

It seems natural for man, even in the earliest stages of society, to endeavour to express, with more or less of proportion, the principal features of the countries in and about which he dwells. An intimation of this branch of the geographical art being in use among the Israelites is given at the beginning of the 18th chapter of the Book of Joshua: the *description* of the land of Canaan there spoken of was enjoined in the year 1444 B.C., and was made in order that the Jewish leader might apportion to the several tribes their respective inheritances. The Israelites must have derived their knowledge in this way from the Egyptians, as the Greeks drew their information from the Phœnicians, the great traders of antiquity, who, in the furtherance of their mercantile pursuits, had probably visited every spot of the then known earth.

The first person, however, who is spoken of as having constructed anything like a regular map of the world was Anaximander, the Milesian philosopher, who flourished in the sixth century before Christ. He also made Globes: he taught that the earth was of a cylindrical form; that men were born of earth and water mixed together, and heated by the beams of the sun; that the earth moved, and that the moon received light from the sun, which he considered as a circle of fire, like a wheel, about twenty-eight times bigger than the earth. He also made some of the earliest sun-dials.

Herodotus relates that certain Persians, commissioned by Darius the First, sailed from Sidon, in Phœnicia, to the coasts of Greece, which they examined, and transcribed, until they arrived as far as Tarentum, in Italy. They seem to have produced a sort of outline map: this took place about 500 B.C. Not long after, as we are told by the same writer, Aristagoras, visiting Cleomenes, king of Sparta, in order to solicit his assistance against the Persians, exhibited to the king a brazen plate or tablet, whereon the round earth was engraved, together with the sea and all the rivers. The object in view was of course to explain to the Lacedæmonians the situation of Persia,—the probable route of the invading army,—and the nature and object of the desired assistance.

Itinerary maps of the places of encampment were almost indispensable to the commanders of armies. Diognetus and Beton are mentioned by Pliny, as the surveyors of the marches of Alexander, who was very careful in examining the measures of his surveyors, and in obtaining his descriptions from the most skilful persons.

The progress of map-making was very considerably advanced by Eratosthenes, who flourished in the third century prior to the Christian era. He was keeper or president of the Library at Alexandria. He has been called a second Plato, the cosmographer and the geometer of the world. He is supposed to be the inventor of the armillary sphere. With the instruments with which the munificence of the Ptolemies, kings of Egypt, supplied the Library of Alexandria, he was enabled to measure the obliquity of the ecliptic, which he called $20\frac{1}{2}°$, it being in fact nearly $23\frac{1}{2}°$. He also measured a degree of the meridian, and determined the extent and circumference of the earth with great exactness, by means adopted by the moderns. He introduced into his map a regular parallel of latitude, which he accomplished by tracing a line over certain places whose longest day was observed to be of the same length. This parallel extended from the Straits of Gibraltar to the mountains of India, passing through the island of Rhodes, and, from its central position with respect to the principal ancient nations, it became a standard of reference in the maps of this period. Succeeding geographers made many attempts to determine the longitude of places by measurements of this line, but with no great success. He also drew a meridian from Meroë, in Western Ethiopia, through Syene, to Alexandria, in Lower Egypt. At this time a connexion was made to subsist between astronomy and geography, so that the advancement of the former tended to the improvement of the latter. Hence it was that Hipparchus, who flourished about 150 B.C. by fixing the construction of maps on something like a mathematical basis, enabled the geographer to lay down his latitudes and longitudes upon certain principles.

The celebrated geographer Strabo, who died A.D. 25, furnishes us with the state of geography in the age of Augustus Cæsar. But the extent of the earth's surface known to this writer does not much exceed that which was known four or five centuries earlier. His map of the world exhibits some remarkable errors. He supposed the Pyrenees to run north and south: he cuts off the projecting province of Brittany from France,—places Ireland, not to the west, but to the north of Britain,—and makes the Caspian communicate with the Northern Ocean, though Herodotus had accurately described it as a lake. A very good illustration of the geography of the ancients may be seen in the frontispiece to No. 379 of this work.

A sort of map, or road-book, called an *Itinerary*, was much in use among the Romans at about the commencement of the Christian era. It resulted from the necessity for furnishing the leaders of armies with information of their destined route; and though these itineraries, or surveys, were made with considerable care, there are no traces of mathematical geography in those which have been handed down to us, the chief object in view being clear directions for the march of their armies.

All the provinces of the Roman empire had been surveyed when Ptolemy composed his system of geography, in the middle of the second century of the Christian era. This production is valuable; because he has therein carried into full practice, and to greater perfection, the system of latitudes and longitudes, published by the celebrated Hipparchus, about three hundred years before.

As Ptolemy derived his information respecting the

distances of places chiefly from itinerary measurements, which usually exceeded the truth, it is not surprising that his map of the world should exhibit enormous errors, more especially in places beyond the ordinary range of the Roman empire. He represents, for instance, the northern coast of Africa nearly as a straight line! He places Carthage 313 English miles to the south of its true place, and Constantinople 276 miles too far to the north. He also makes the Mediterranean sea about 1000 English miles longer than it really is! Some of the most distinguished and best known places in Europe have been set down 500 or 600 miles too far apart:—and, strange to say, many such gross inaccuracies continued in the maps till the beginning of the eighteenth century! But we have already noticed this subject in our second article on Ancient NAVIGATION: Vol. XIII., p. 208.

It seems not improbable that the maps found in the MSS. of Ptolemy are really copies of, or derived from, original maps constructed by him, or under his care. So great an influence had this writer on the minds of most modern geographers until within 150 years ago, that many instances might be adduced, in which the authority of Ptolemy, who was but slightly acquainted with one half of the globe, was blindly submitted to in an age when Europeans wandered over its entire surface.

The itineraries of the Romans were of two kinds,—*Picta*, and the *Annotata*, the drawn and written: the latter contained the names of the stations and chief places from one another, without any detail: whereas, the former have all the graphic finish of a modern map. Of the former kind of itinerary, the most remarkable that remain to us, are the Itinerary of Antonine, the age of which it is difficult to ascertain; and the Itinerary of Jerusalem, a fragment which points out the whole route from Bordeaux to that city

Of the painted itineraries, a fine specimen is still preserved in the Imperial Library of Vienna; and it has been engraved and published under the name of the *Peutingerian Table*. It was probably originally made about the time of the Emperor Severus, or in the year 230 A.D. The copy which at present exists, is thought to be the work of a monk of the thirteenth century; it owes its name to Conrad Peutinger, a citizen of Augsburg, to whom it formerly belonged, and by whom it was illustrated in a learned commentary. The countries marked on this map are not placed in it according to their geographical position, their respective limits, and their real size; they are ranged arbitrarily, one after the other from west to east, without any regard to figure, or latitude and longitude. This table, or picture, is about twenty-two feet long, and one foot broad.

Some curious particulars have come down to us illustrative of the geographical ignorance of the MIDDLE AGES. The maps of these times may be generally classed, first,—into those in which the notions of the ancients were adhered to; and secondly,—those which exhibited new discoveries or countries popularly believed to exist. Many maps, of the *first* class are extant, in which the old world is represented as one great island; Africa terminating to the north of the equator. Among maps of the *second* class are those which seem to show some important discoveries in the west of Europe and of Africa in the twelfth and thirteenth centuries.

The geography of the Arabians is but imperfectly known. Their most eminent geographer, Al Edrissi, who lived about the middle of the twelfth century, divided the world into seven climates, from the equator northward; and each climate was again divided into eleven equal parts, from the western coast of Africa to to the eastern coast of Asia; the inconvenience of which arrangement is very obvious.

In the year 1383, two noble Venetians, named Zeni, having entered into the service of a prince of the Faroe Islands, which lie to the north of Scotland, drew up a map to illustrate the account of their navigations in these seas.

In some of the old British maps, which are rude in design and execution, Scotland is represented as an island separated from England by an arm of the sea. Ireland is also divided in two by the river Boyne, which is represented as a canal connecting the Irish Channel with the Atlantic. The towns are drawn in these maps of a disproportionate size; and the abbeys, with their walls, gates, and belfries, occupy so great a space, as to leave little room for the rivers, boundary-lines, or places of less seeming importance.

We have elsewhere noticed the famous silver map of Charlemagne *; but one of the most curious geographical monuments of those times is a map preserved in the Library of Turin, attached to a manuscript copy of the Apocalypse, which was written in the year A.D. 787. It represents the earth as a plane bounded by a circular line, and divided into three unequal parts. To the south, Africa is separated by the ocean from a land called the *fourth division of the world*, where the antipodes dwell, and which the excessive heat of the torrid zone had hitherto prevented from being visited. At the four sides of the world are represented the figures of the four winds, each astride upon a pair of bellows, which he works, and at the same time, with a conch-shell applied to his mouth, he blows hurricanes, as may be conjectured from his distended cheeks. At the top of the map, which is the east, are Adam and Eve, the serpent, and the tree of forbidden fruit: at their right hand is Asia.

The maps of the middle ages erred as often from the love of mere systematical arrangement, as from want of information. This is shown in the map of Martino Sanudo, which was published at the beginning of the fourteenth century, and has *Jerusalem* as its centre.

Passing by many other old maps, which were executed before the discovery of America by Columbus at the end of the fifteenth century, one remains to be noticed, which, if its reality were fully proved, would reduce the merit of that great navigator to the mere re-discovery of countries which were known, perhaps, a century before his time. This supposed discovery is indicated in a map constructed by Andrea Bianco in 1436, and preserved in the Public Library of Venice. In this map, in addition to much correct, false, and imaginative information, is represented, to the west of the Canary Islands, a country of great length, and of a quadrilateral form, to which is given the name of *Antilia*. This country, in the same situation and with the same name, is also found on the globe made by Martin Behaim, at the close of the fifteenth century. Many persons believe that the Antilia of Bianco was the continent of South America; while others maintain that it owed its existence wholly to the author's imagination. The maps of Bianco, however, contain much to interest us, independent of their intrinsic merit: in the first sheet of his collection is represented the mariner's compass, together with some nautical tables.

With the discovery of America, and consequent extension and improvement of geographical information, maps became more clear and correct, and began, at length, to be constructed on principles more in accordance with the precision of science, as we shall show in our next paper.

* See *Saturday Magazine*, Vol. XIII., p. 168.

A CERTAIN petulant Greek, objecting to Anacharsis that he was a Scythian; "True," said Anacharsis, "my country disgraces me, but you disgrace your country."

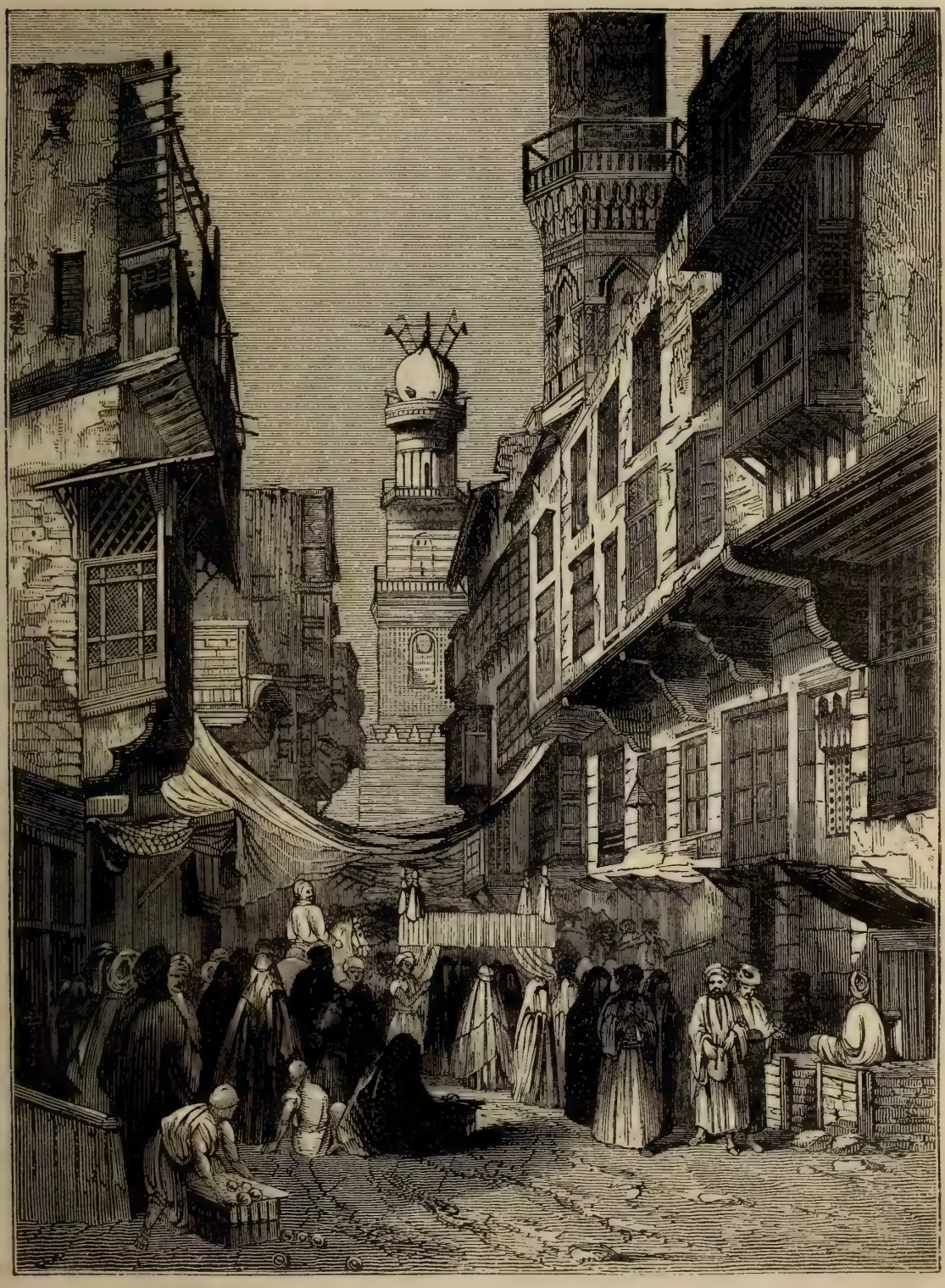
LONDON:
JOHN WILLIAM PARKER, WEST STRAND.
PUBLISHED IN WEEKLY NUMBERS, PRICE ONE PENNY, AND IN MONTHLY PARTS, PRICE SIXPENCE.
Sold by all Booksellers and Newsvenders in the Kingdom.

THE

Saturday Magazine.

No. 591. SEPTEMBER 18TH, 1841. { PRICE ONE PENNY.

SKETCHES OF CAIRO. III.



BEYN-EL-KASREYN, WITH THE MINARET OF THE TOMB OF SULTAN KALAOON.

SKETCHES OF CAIRO.

III.

THE mosques of Cairo are numerous, and some of them so large as to occupy spaces three or four hundred feet square. They are mostly built of stone, the alternate courses of which are generally coloured externally red and white. A large mosque commonly consists of porticoes surrounding a square open court, in the centre of which is a tank or fountain for ablution. One side of the building faces the direction of Mekkeh, and the portico on this side, being the principal place of prayer, is more spacious than those on the three other sides of the court. It has generally two or more rows of columns, forming so many aisles parallel with the exterior wall. Sometimes this portico like the other three is open to the court; in some cases it is separated from the court by partitions of wood, connecting the front row of columns. In the centre of its exterior wall is a niche, which marks the direction of Mekkeh; and to the right of this is the pulpit. Opposite the niche there is generally a platform surrounded by a parapet and supported by two small columns; and by it, or before it, are one or two seats, having a kind of desk to bear a volume of the Ckooran, from which a chapter is read to the congregation. The walls are generally quite plain, being simply white-washed; but in some mosques the lower part o the wall of the place of prayer is lined with coloured marbles, and the other part ornamented with various devices executed in stucco, but mostly with texts of the Ckooran (which form long friezes, having a plea ing effect), and never with the representation of anything that has life. The pavement is covered with matting, and the rich and poor pray side by side, without any distinction as to rank; unless, (as is sometimes the case,) the rich man is attended by his servant, who brings a prayer-carpet and spreads it for his master. The prayer-carpet is about the size of our hearth-rugs, and has a niche represented upon it, the point of which is turned towards Mekkeh.

The Mooslim prepares himself for prayer by ablution. In every mosque there is a tank or reservoir for the supply of water; the person, therefore, having tucked up his sleeves a little higher than his elbows, says, in a low voice, "I purpose performing the woodoo (ablution) for prayer." He then washes his hands three times; and this, as well as every after ceremony, is accompanied by its peculiar prayer or ejaculation. He then rinses his mouth thrice, throwing the water into it with his right hand. Next, with his right hand, he throws water up his nostrils (snuffing it up at the same time), and then blows it out, compressing his nostrils with the thumb and finger of the left hand; and this also is done three times. He then washes his face three times, throwing up the water with both hands His right hand and arm, as high as the elbow, he next washes three times, and as many times causes some water to run along his arm from the palm of the hand to the elbow; he then repeats the same ceremony with the left hand and arm. He next draws his wetted right hand over the upper part of his head, raising his turban or cap with his left. If he have a beard, he then combs it with the wetted fingers of the right hand; holding his hand with the palm forwards, and passing the fingers through the hair from the throat upwards. He then puts the tips of his fore-fingers into his ears, and twists them round, passing his thumbs at the same time round the back of the ears from the bottom upwards. Next he wipes his neck with the back of the fingers of both hands, making the ends of his fingers meet behind his neck, and then drawing them forward. Lastly, he washes his feet as high as the ankles, and passes his fingers between the toes.

The woodoo, (says Mr. Lane), is generally performed in less than two minutes; most persons hurrying through the act, as well as omitting almost all the prayers, &c., which should accompany and follow the actions. It is not required before each of the five daily prayers, when the person is conscious of having avoided every kind of impurity since the last performance of this ablution. When water cannot be easily procured, or would be injurious to the health of the individual, he may perform the ablution with dust or sand. This ceremony is called *tey emmoom*. The person, in this case, strikes the palms of his hands upon any dry dust or sand (it will suffice to do so upon his cloth robe, as it must contain some dust), and, with both hands, wipes his face; then, having struck his hands again upon the dust, he wipes his right hand and arm as high as the elbow; and then, the left hand and arm, in the same manner. This completes the ceremony

Not only is cleanliness required in the worshipper, but also in the ground, mat, carpet, robe, or whatever else it be, upon which he prays. Persons of the lower orders often pray upon the bare ground, which is considered clean if it be dry; and they are in no hurry to wipe off the dust which adheres to the nose and forehead in prostration, for it is regarded as ornamental to the face; but when a person has a cloak or any other garment that he can conveniently take off, he spreads it upon the ground to serve as a prayer-carpet.

Prayer is required of the Mooslim five times in the course of every day. First, about four minutes after sun-set; secondly, when the evening has closed and it is quite dark; thirdly, at day-break; fourthly, at noon or a little later; and lastly, between noon and night. The Prophet would not allow his followers to pray at sun-rise, nor exactly at noon or sun-set, because, he said, infidels worshipped the sun at such times. The several times of prayer are announced by the mooeddin of each mosque from the minaret. Mr. Lane says, "Most of the mooeddins of Cairo have harmonious and sonorous voices, which they strain to the utmost pitch; yet there is a simple and solemn melody in their chants which is very striking, particularly in the stillness of night."

The devotions of the Mooslims, consisting as they do for the most part of a heartless repetition of words and idle ceremonies, have no permanent influence on the people generally; and are, indeed, felt to be a burdensome task, so that "there are comparatively few persons in Egypt who do not sometimes, or often, neglect this duty [of prayer]; and many who scarcely ever pray."

For the forms of prayer, and a minute description of the ceremonies, positions of the body, &c., which accompany their utterance, we refer to Mr. Lane's work. In the course of these ceremonies many ejaculations are repeated thirty-three times. These repetitions are counted on a string of beads ninety-nine in number, with a mark between each thirty-three. The beads are formed of aloes or other odoriferous or precious wood, or of coral, or of certain fruit-stones, or seeds, &c. In the "vain repetitions," varied ablutions, and other ceremonials of the Mooslim faith, we have an exact counterpart of the practice of the Pharisees of old so expressly condemned by our blessed Lord, as being the cleansing of the outside merely, while within was extortion and excess.

The Mooslim says the five daily prayers in his house or shop, or in the mosque, according as may be most convenient to him: it is seldom that a person goes from his house to the mosque to pray, except to join the congregation on Friday. Men of the lower orders oftener pray in the mosques than those who have a comfortable home, and a mat or carpet upon which to pray.

The same prayers are said by the congregation in the mosque on the noon of Friday, but there are additional rites performed by the Imam and other ministers on that occasion. The chief reasons for selecting Friday as the Mohammedan sabbath, were, it is said, because Adam was created on that day, and died on th same day of the week, and because the general resurrection was prophesied to happen on that day; whence Friday was named the day of El-Gom'ah, or the assembly. The

Mooslim does not abstain from worldly business on Friday except during the time of prayer.

The large mosques are open from day-break till nearly two hours after sun-set. The others are closed between the hours of morning and noon prayers; and most mosques are also closed in rainy weather (except at the times of prayer) lest persons who have no shoes should enter and soil the pavement and matting. Such persons always enter by the door nearest the tank or fountain that they may wash before they pass into the place of prayer; and generally this door is left open in dirty weather. The great mosque El-Azhar remains open all night, with the exception of the principal place of prayer, which is partitioned off from the rest of the building. In many of the larger mosques, particularly in the afternoon, persons are seen lounging, chatting together, eating, sleeping and sometimes spinning, or sewing, or engaged in some other simple craft; but Mr. Lane says that, notwithstanding such practices, the Mooslims very highly respect their mosques.

The other religious practices of the Mooslims consist in *alms-giving*, *fasting*, and *pilgrimage*. We will quote Mr. Lane's account of this last duty of the Mooslim.

It is incumbent on every Mooslim, to perform once in his life, the pilgrimage to Mekkeh and Mount Arafat, unless poverty or ill health prevent him; or, if a Hhanafee, he may send a deputy whose expenses he must pay. Many, however, neglect the duty of pilgrimage who cannot plead a lawful excuse, nor are they reproached for so doing. It is not by the visit to Mekkeh, and the performance of the ceremonies of circuiting the Kaabeh seven times, and kissing the "black stone" in each round, and other rites in the holy city, that the Mooslim acquires the title of *el-hhagg* or the pilgrim; the final object of the pilgrimage is Mount Arafat, six hours journey distant from Mekkeh. During his performance of the required ceremonies in Mekkeh, and also during his journey to Arafat and until his completion of the pilgrimage, the Mooslim wears a peculiar dress, called *ehhram*, generally consisting of two simple pieces of cotton, or linen, or woollen cloth, without seam or ornament, one of which is wrapped round the loins, and the other thrown over the shoulders; the instep and heel of each foot, and the head, must be bare; but umbrellas are now used by many of the pilgrims. It is necessary that the pilgrim be present on the occasion of a khootbeh which is recited on Mount Arafat in the afternoon of the 9th of the month of Zool-Hheggah. In the ensuing evening, after sunset, the pilgrims commence their return to Mekkeh. Halting the following day in the valley of Mina (or, as it is more commonly called, Moona), they complete the ceremonies of the pilgrimage by a sacrifice (of one or more male sheep, he-goats, cows, or she-camels, part of the flesh of which they eat, and part give to the poor,) and by shaving the head and clipping the nails. Every one after this resumes his usual dress, or puts on a new one, if provided with such. The sacrifice is called *el-fida* (or the ransom), as it is performed in commemoration of the ransom of Ismaeel (or Ishmael) by the sacrifice of the ram when he was himself about to have been offered up by his father: for it is the general opinion of the Mooslims that it was this son, not Isaac, who was to have been sacrificed by his father.

Our frontispiece (selected from one of the views in Mr. Hay's admirable work) represents the collegiate and sepulchral mosque adjoining the Muristan. Over its entrance is the following inscription:—

In the name of God, the compassionate, the merciful, the Sultan El'-Adil es Salehee, Mohammed, the son of the deceased Sultan Kalaoon (may God sanctify his soul!) founded this honoured Kubbeh (or dome-crowned building) in the months of the year 695 A.H. (A. D. 1295-6).

The Minaret (says Mr. Hay) is partly coloured with broad alternate stripes of red and white, so commonly adopted in Cairo, pleasing in the relief it gives to the eye from the glare of an ardent sun, and the monotony of colours in so arid a climate.

The Sultan Kalaoon is said to have been a skilful physician, and superstition preserves in the mosque several talismanic mementoes of his reputation: amongst them are two columns, the touch of one of which is believed to be a sure cure of jaundice.

The celebrated charitable foundation which adjoins this mosque is destined to receive weak and insane patients. It was founded by the Sultan Kalaoon, and bears the following inscription:—

Our Lord the most great Sultan, el-Melik el-Mansoor Seyf-ed-Deen Kalaoon, es-Salehee, commanded to found this noble venerated Kubbeh and blessed college and blessed Beemaristan; and the commencement of the construction thereof was in Rabeea-el-Akhir, in the year 683 (A. D. 1284); and the completion thereof in Gumada-'l-oola, in the year 684.

Part of the minaret of the Barkrookeyeh is also represented. Three musicians with the zemr and tabl (hautboy and drum) precede a marriage procession; the female friends and relations of the bride follow, amongst whom the virgins are distinguished by their white dresses. The bride, supported by four others of her relations, is beneath the canopy; the corners of which, on the top of the poles, are adorned by embroidered handkerchiefs.

MAPS AND MAPPING. II.

MODERN MAPS.—PROJECTION OF THE SPHERE.—GNOMONIC.—ORTHOGRAPHIC.

MODERN MAPPING is particularly distinguished by the accuracy with which the relative positions on the surface of the earth are marked, in consequence of the aid afforded to the subject by astronomical discovery. Attempts were at first made to determine the longitude of places, by observing the eclipses of the sun and moon; but this method proved, on experience, so likely to be attended with error, that astronomers were constrained to abandon it. Galileo, by the discovery of the satellites of Jupiter, in 1610, introduced a more certain method, which was rendered available by means of the simultaneous observations of Picard and Cassini, at the observatories of Uraniburg (in Denmark) and Paris.

These experiments were made in the latter part of the seventeenth century; and, in consequence of their success, MM. Picard and De la Hire were employed to examine and to correct the map of France by astronomical observations. In executing this task, they were obliged to contract France within much narrower boundaries than it was supposed, according to the maps of that time, to occupy. They reduced it above one degree of longitude along the western coast from Brittany to the Bay of Biscay; and, in the same manner, they cut away about half a degree from the shores of Languedoc and Provence. These changes gave rise to a jest of Louis the Fourteenth, who, when complimenting the astronomers at the completion of their task, told them "he was sorry to observe that their journey had cost him a large portion of his kingdom."

But the map-makers of the times, with an inveterate attachment to the notions and methods of their predecessors, were tardy in taking to their service the astronomical observations which were multiplied round them every day. The map of the Mediterranean was not adjusted until the year 1720; and it was then done in consequence of Chazelles being sent to the Levant, to ascertain the difference in longitude between the shores of Palestine and the meridian of Paris.

William Delisle and J. B. d'Anville, by eschewing the errors of the ancients and adopting the light of modern science, brought the state of mapping to a greater perfection than it had heretofore obtained. While the French were thus engaged, at the beginning of the eighteenth century, the English laboured to the same end by means of Halley and Newton. As the process of map-making now began to attain the comparative completeness of recent times, we need not dwell further on this part of our subject, than to observe that, notwithstanding the advanced state of our astronomical and geographical knowledge, and the science and skill displayed in our great national and other surveys, we

must still regard maps as works in progress,—always unfinished, and still waiting the corrections to be supplied by the science and enterprise of succeeding ages.

We shall endeavour now to describe in a clear, but concise, manner, the fundamental principles which have been employed at various times and on various occasions for the production of maps, or scientific pictures of the earth's surface. The reader, being doubtless acquainted with the form of the earth, will see at once that the main object to be achieved is, to represent on a plane, or flat, surface that which is actually round, or spherical. The smaller the portion of the earth's surface to be represented, the more easily may this be done; but the nearer we approach to a hemisphere of the earth, the more difficult is this object to be accomplished, without distortion of some of the parts. All the methods used with this view are but approximations to correctness, as we shall presently explain.

From the spherical form of the earth, the divisions and varieties of its surface may be most simply and most accurately represented by means of a globe; and, in order to obtain a correct notion of its general geographical features, there is no mode of representation so satisfactory. Large globes are, however, expensive and inconvenient instruments; and small ones, by not admitting sufficient detail, are, for most geographic purposes, entirely useless. For instance,—with a scale which would make the map of England extend only about six inches from north to south,—thus giving one degree of latitude to an inch,—the diameter of a globe, on which the whole surface of the earth should be delineated, would be upwards of $9\frac{1}{2}$ feet! In this representation we must also omit all the minute divisions of the countries of the earth, together with a vast body of geographical and statistical distinctions, invaluable to geography as a science.

We not only have *terrestrial* maps, which aim at representing the convex surface of the *earth*, but *celestial* or astronomical maps, are made to represent the (apparent) concave surface of the *heavens*.

Of terrestrial maps there are two sorts,—*geographic*, or land-maps; and *hydrographic*, or sea-maps: the former are specially styled "MAPS,"—the latter are usually denominated "Charts."

Geographical maps are *universal* or *particular;* the former representing the two hemispheres of the world,—the latter containing only particular portions of the globe. When maps give the nature of the *ground*, the roads, buildings, &c., in detail, they become *topographic* maps, which, necessarily embracing a very small extent of country, are not usually referred to any spherical projection, but are represented as geometric planes, the objects in them occupying the positions severally assigned to them by the trigonometrical operations of the survey. The same distinction is made in charts of small bays and harbours. In either of these cases they are often called "Plans." Maps which are intended merely to illustrate some of the sciences, bear their own peculiar names; as geological, mineralogical, or botanical maps.

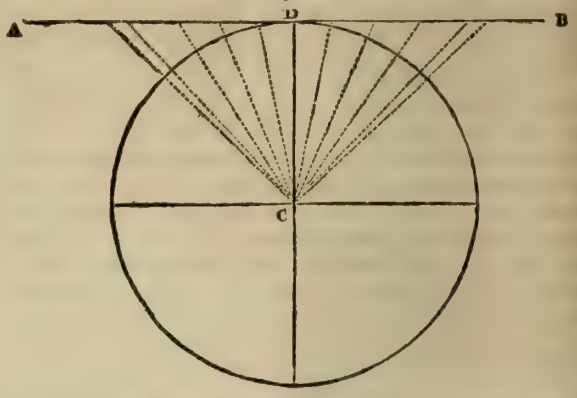
The various methods adopted by geographers in the construction of maps, may be referred to two principles,—PROJECTION and DEVELOPMENT.

The term "Projection," implies a *throwing forward*, or *laying down in front:* it is used to express generally the representation of the surface of a sphere according to the rules of perspective.

I. Of projection as referring to the first principle, there are four sorts in common use;—the Gnomonic or Central,—the Orthographic,—the Stereographic,—and the Globular: all these are distinguished from each other by the different positions of the projecting point in which the eye is supposed to be placed.

1. In the Gnomonic or CENTRAL Projection, the eye is supposed to be placed in the *centre* of the sphere, as at C; and the various objects to be delineated are transferred from the sphere to the plane A B, which is a tangent to its surface at D, where the rays are direct. It

Fig. 1.



is termed *gnomonic*, because of the connexion between the methods of laying down this projection and those for the construction of a *gnomon*, or sun-dial. The gnomon, or style of a dial, is the plate which projects from the surface of the dial-plate, the edge of its shadow determining the hour-line.

A slight consideration of this sort of projection makes it manifest to us that it is most profitably employed in astronomical maps; portions only of the concave sphere of the heavens being afforded at one view, as may be observed by reference to the preceding diagram; where it is evident that five or six *plane*-maps would be required to lay down the concave surface of the sphere whose centre is C. It will be observed also that an entire hemisphere cannot be thrown upon the plane A B.

In this projection, all the *great* circles of the sphere,—that is, all such as have their centres coinciding with the centre of the earth,—appear as straight lines; which property belongs to no other projection.

Though this projection may be advantageously applied to any maps of a limited extent, yet it is more particularly useful in maps of the polar regions of the globe. In this case, the meridians will be straight lines radiating from the centre, and the parallels of latitude concentric circles. Other cases of this projection, in respect of terrestrial maps, are seldom brought into use, because the construction is rendered troublesome, on account of the parallels of latitude becoming curves of difficult delineation.

2. The ORTHOGRAPHIC projection is so named, because the *delineation* is completed, as it were, by *right* lines. In this projection the eye is supposed to be at an infinite distance off; so that the visual rays leave the sphere in parallel lines. The perspective plane, on which a hemisphere is supposed to be delineated, is, therefore, at right angles to the visual rays;—hence, every point of the hemisphere is transferred to this plane by perpendiculars let fall upon it. It will be seen at once from the annexed figure, that the representation will decrease in accuracy with the increase of distance from the centre; the parts near the circumference being much foreshortened and distorted. For instance,—although the points A B C D are equidistant, their representatives *a b c* D are very unequally disposed.

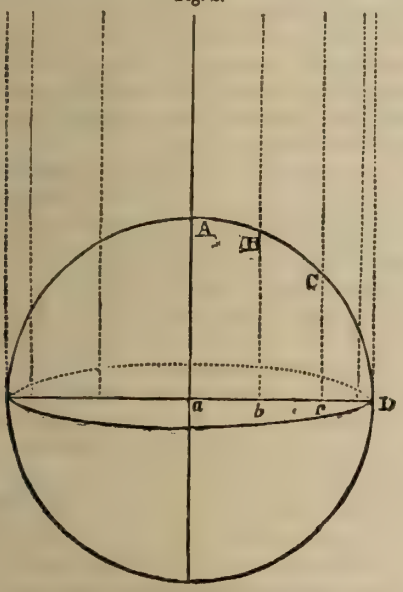
By this projection the surface of a hemisphere is reduced to that of a great circle of the sphere, or only half its hemispherical area; and, consequently, all parts of that surface are contracted, while equal parts of the spherical surface are not reduced to equal spaces on the map. On account, therefore, of the excessive contraction on approaching the extremities, this projection, though it is occasionally used for astronomical purposes, is almost exploded in the construction of geographical maps.

The orthographic projection of any object,—the terrestrial globe for example,—with all its circles, and the continents and islands on it surface, is *nearly* the representation or picture which an artist would delineate on a plane surface, if he meant to represent the globe at a considerable distance from the eye; and it is *exactly* the appearance which the globe would have, supposing an eye could view it at an infinite distance off.

In a polar map of this projection,—that is, a map which has one of the poles for its centre,—the meridians, as in the polar gnomonic maps, will be radii, and the parallels concentric circles. In an equatorial map, or one in which the equatorial regions of the globe are made to occupy the centre of the map, the plane of projection coincides with the plane of one of the meridians. In this case, the latitude-circles will form straight lines parallel with the equator, which will be also a straight line: the meridians will form portions of ellipses.

We shall notice the principles employed in the other modes of projection, in our next and concluding paper.

Fig. 2.



CHINA. XII.

The Island of Chusan—Military Occupation—Houses and Offices of the Chinese.

The extreme jealousy with which the authorities of the *Celestial Empire* are accustomed to regard all foreigners, enhances the value of any authentic information which may be obtained respecting a people, of whom the little we know only adds to our desire of a more thorough knowledge. Valuable, indeed, to the political economist would be an authentic statement of the statistics of an empire which in many things differs so widely from all the kingdoms of Europe; a country where civilization and literature seem to have advanced to a certain extent, and then for ages to have remained stationary; a country more densely peopled than any other part of the world, and yet where all emigration is so much discouraged, that, to use an expression of their own, "when a Chinaman leaves the flowery land to wander in countries beyond the sea, he rarely, if ever, is permitted to return to his native land;" a country which, notwithstanding its vast extent of territory and immense population, has for so many centuries been the seat of a permanent government more exempt from revolution than any other in the world. Various writers, indeed, have presented us with their accounts of China, but those which enter most into detail seem obnoxious to the remark of Lord Jocelyn, that their "lengthened labours require an appetite for the marvellous to digest. Dates and exact statements of finance, &c.," continues he, "are difficult to be correctly obtained in any country, but more particularly in these far eastern lands; and it is not probable that a jealous race like the Chinese would permit a stranger to become very intimately acquainted with their internal policy. Errors may have arisen not from any intentional mis-statement, but from a guileless disposition, giving too easy a credence to the natives of the country."

We have been careful in the information with which, from time to time, we have furnished our readers, to confine ourselves to such subjects as might fall under the observation of Europeans, and to draw from none but authentic sources; we now proceed to make a few extracts from the *Personal Narrative* lately published by Lord Jocelyn, who acted for some months in the capacity of Military Secretary to the China mission, but was compelled by severe illness to return home. Passing over the capture of the island of Chusan, we will accompany the conquerors into the city of Tinghai:—

"A few of the staff entered the town, accompanied by an interpreter, to quiet the fears of the inhabitants, whilst the troops remained in position on the outer side of the fosse. The main street was nearly deserted, except here and there, where the frightened people were performing the kow-tow* as we passed. On most of the houses was placarded 'Spare our lives;' and on entering the jos-houses were seen men, women, and children, upon their knees, burning incense to the gods; and although protection was promised them, their dread appeared in no manner relieved. Many were posting down the back lanes into the country with their spoil, for we afterwards found the goods principally carried away were taken by plundering natives, not by the legitimate owners.

"At last we came to the house of the Chumpin (Admiral): the gates leading to the entrance-yard were painted with huge ungainly figures, denoting, they said, Justice and Punishment. On one side was the Room of Justice, and thumb-screws and rattans were seen lying about. The path to the inner apartment, called the Hall of Ancestors, lay through an open court, round which were the offices of the government clerks. Some letters and papers half-finished showed the haste with which the town had been evacuated. Passing through the court we entered a guard-house, which led again to a trelliced walk, at the south end of which was the hall. Here on the couches were the pipes half-smoked, and the little cups filled with the untasted tea; cloaks, mandarin's caps, and swords lay about in confusion. Following up our research we at last came to the apartments of the ladies: these rooms were curiously furnished, and strewed with clothes of all descriptions and for all purposes. Silks, fans, china, little shoes, crutches, and paint-pots—the articles of a Chinese lady's toilette—lay tossed in a sad and tell-tale *mêlée*, and many of these fairy shoes were appropriated by us as lawful *loot*†.

"The town of Tinghai, or Tinghai-een, covers a large space of ground at the mouth of a valley or rather gorge; the neighbouring hills are clothed with wild shrubs, of which the tea-plant is the most predominant. The city lies embosomed in luxuriant paddy, except towards the rear, where a beautiful hill commands the whole town, dotted with clumps of fine trees, part of it being included within the wall and the fortifications that encircle the town. Two paved roads lead down to the suburbs on the shore, a distance of about three-quarters of a mile, flanked on the left by the Jos-house hill. The buildings in and near seem to consist of large warehouses belonging to the merchants of the town, and are very convenient for shipping and landing their cargoes. Tinghai is surrounded by a wall, about sixteen feet in thickness and twenty in height: there are four gates, agreeing with the cardinal points of the compass, traversed much in the

* A salute practised by an inferior to his superior, kneeling and striking the head upon the ground.

† A Bengalee word for plunder—at which, by the bye, they are peculiar adepts.

form of Marhattah forts, the principal one being on the southern point facing the sea. The wall is surrounded by a canal, which acts as a ditch to the fortification, except at the north-west angle. Two powder-magazines were found neatly packed and filled with ammunition, and with implements for the manufacture of powder: on the walls were mounted gingalls and cannon of various calibres, but none exceeding a nine-pounder; and wall-pieces with shifting breeches, each having eight or nine spare breeches attached to it, ready loaded. The streets are narrow, and many of the houses dry-rubbed, and polished outside; but the roofs are the most picturesque part of the buildings. Many of the respectable houses have pretty gardens attached to them, with a high wall shutting them out entirely from the town. The interiors of some of the houses were found beautifully furnished and carved: one that is now inhabited by the Governor, and believed to have been the property of a literary character, was, when first opened, the wonder and admiration of all. The different apartments open round the centre court, which is neatly tiled; the doors, window-frames, and pillars that support the pent roof, are carved in the most chaste and delicate style, and the interior of the ceiling and wainscot lined with fretwork, which it must have required the greatest nicety and care to have executed. The furniture was in the same keeping, denoting a degree of taste the Chinese have not in general credit for with us. The bed places in the sleeping apartments of the ladies were large dormitories, for they can hardly be called beds: at one corner of the room is a separate chamber, about eight feet square, and the same in height; the exterior of this is usually painted red, carved, and gilt; the entrance is through a circular aperture, three feet in diameter, with sliding pannels; in the interior is a couch of large proportions, covered with a soft mat and thick curtains of mandarin silk: the inside of the bed is polished and painted, and a little chair and table are the remaining furniture of this dormitory.

"Many of the public buildings excited great astonishment among those who fancied they were in a half barbarous country. The public arsenals were found stocked with weapons of every description, placed with the greatest neatness and regularity in their different compartments: the clothes for the soldiers were likewise ticketed, labelled, and packed in large presses, and the arrows, which from their size and strength drew particular attention, were carefully and separately arranged. To each arsenal is attached a fire-engine, similar to those used in our own country.

"The government pawnbroker's shop was also a source of interest: in it were found dresses and articles of every kind, evidently things belonging to the upper as well as the lower classes, for many of the furs here taken were of valuable descriptions: each article had the owner's name attached, and the date of its being pawned: this is one of the plans of the local government for raising their supplies. In the treasury there was a sad deficit for the prize-agents, no bullion being discovered in the chests: this, however, had been evidently cleared out by the government servants.

"The town is intersected with canals, which run at the back of many of the principal streets, thereby enabling the inhabitants to take their goods without trouble from their own doors to any part of the city, and thus communicate with the suburbs and port with the greatest facility, by the water-gate.

"Some of the joss houses, in this place, from what we have seen and heard from others, are to be surpassed by none in China. In Lord Macartney's mission, the one at Macao is mentioned as the finest specimen they saw in the whole tour, but all those who have visited the principal ones at Tinghai agree in their great superiority over it. In the great temple some of the figures in the principal hall are upwards of fifteen feet high, handsomely wrought, standing in the centre on a lofty pedestal, while around the walls are small images of the same description in all sorts of grotesque attitudes. We were particularly struck by one, the figure of a woman, with a child apparently issuing from her breast, and a glory round her head. It seems difficult to say from what this has arisen, unless from the pictures of the Virgin, which the Chinese formerly obtained from the Jesuit missionaries, and have thus distorted. A white elephant was likewise a great subject of discussion, being hitherto known only as a figure of worship in Birmah and Siam.

"Very few women were found in any of the houses, although, as it afterwards appeared, whole families of Chinese were then residing in the town, locked up in their dwellings, and were not discovered until the ulterior occupation of the city by the troops for winter quarters. All the women we saw here had the little feet which to the south is generally the appendage of the higher orders, and made use of a crutch when walking. Many of the silks taken in the houses of mandarins and people of wealth were of the finest textures, and covered with magnificent embroideries.

"Since I have seen many of the houses and temples of the Chinese, the paintings on the old china imported into England have struck me as the best delineation of the buildings and figures of these extraordinary people, and it is wonderful how correct they are in the main features."

He who contends for truths which he has himself been permitted to discover, may well sustain the conflict in which presumption and error are destined to fall. The public tribunal may neither be sufficiently pure nor enlightened to decide upon the issue, but he can appeal to posterity, and reckon with confidence on "its sure decree."—SIR DAVID BREWSTER.

ON CHESS. No. XVII.

THE AUTOMATON CHESS-PLAYER. 5.

THE explanation which has been given of the Chess Automaton is admitted to be correct in all its details, except as regards the means employed by the concealed player to gain a knowledge of the moves of his antagonist and to make his own. This information belongs, however, to those minor details which could only be obtained by actual inspection of the interior arrangements of the machine:—we can scarcely admire too highly the sagacity of Mr. Willis, who, enjoying no advantages of inspection beyond those given to the spectators in general, succeeded, nevertheless, in discovering the secret of this famous machine, and demonstrating, by means of drawings and clear descriptions, the presence and position of the *animal power* which worked the automaton.

Mr. Willis imagined that the concealed player obtained a view of the chess-board by looking through the waistcoat of the figure, so that his head was separated from the spectators only by a thin veil. The objections to this theory are numerous: among the many eyes and ears, sharpened as they were by anxious curiosity, something would surely be seen or heard to lead to discovery, —the smallest motion or sound,—even the simple act of respiration in that confined situation, might detect the confederate. It is evident that de Kempelen foresaw all this, and was thus led to provide the ingenious means we are about to describe, as being the more secret and effectual for carrying on the game.

It is proper to state that M. Mouret himself, so long the secret colleague of M. Maelzel, furnished an account of the mysteries of the automaton, from which M. de Tournay, a member of the Paris Chess Club, has published his account in the first volume of *Le Palamède*, a French periodical, devoted chiefly to Chess. It is from this source that we have derived the following information, which may, therefore, in every respect, be considered authentic.

We stated in a former article, that, during the exposure of the interior mechanism, the exhibitor held a lighted candle to several parts of the machinery, and that he left his candle burning on an adjoining slab: the reason for this was to prevent any notice being taken of a wax taper in the interior of the machine, should its rays chance to flash out during the exhibition. The wax taper furnished the concealed player with light; and he was supplied with air by certain openings which did not appear, and by others which appeared necessary to the construction of the outer chest, or to the trunk of the Turk.

Within reach of the concealed player were, *first*, a handle by which he could guide the arm of the automaton; *secondly*, an elastic spring for moving its fingers; and, *thirdly*, a cord in communication with bellows for producing a sound to imitate "Check*." The principal contrivance requiring explanation is, that by which the player was made acquainted with the moves on the automaton chess-board, and thus enabled to repeat them on a smaller chess-board of his own. The concealed player is seated in that part of the chest immediately under the automaton's chess-board, and may be supposed to be looking up to the roof of his narrow cell. There, on what may be called his ceiling, he sees a representation of that chess-board, each square painted to correspond with the square above; the only difference being, that, in the automaton's board, some of the squares are occupied by chess-men and the rest are empty, while, in the board beneath, every one of the squares is numbered and furnished with a small metallic knob. Every chess-man on the automaton's board contains a small magnet, and each move made with any one sets in motion the metallic knob belonging to the squares from and to which such piece is played.

To illustrate this action more clearly, let the reader suppose himself placed under a table both surfaces of which are respectively divided into sixty-four corresponding squares: to each square of the under-side of the table is suspended by means of a very short thread a little iron ball. Now, as a magnet exerts its attractive force for unmagnetised iron and steel through any known substance, (except, of course, through iron and steel,) it is quite clear that the wood of the table will not prevent the magnets contained within the chessmen from attracting the little balls, and holding them, as it were, fixed to the under surface of the table: but, as there are only thirty-two chessmen actually on the board at the commencement of the game, it follows that thirty-two balls are attached to the wood of the table, while the other thirty-two remain suspended by their threads. As soon as one particular piece is taken up for the purpose of making a move it is obvious that the metallic knob immediately below it, being no longer subject to the magnetic attraction, falls as far as it is permitted by the length of the thread which supports it, and thus intimates to the person below that the square just occupied by a piece is now vacant;—but the piece being placed on another square, the knob below that square starts up and thus indicates the precise square to which the piece was played. The concealed player repeats the move on a little board, with which he is furnished, and which is numbered to correspond with the board on the underside of the table; this board is constructed in the manner of the chess-boards used in travelling so as to be safe from the danger of having the pieces upset. On this board he also makes his own move, and takes note of the numbers of the squares from and to which his piece is played;—he then sets the arm of the automaton in motion,—takes up the piece he designs to play,—the little knob falls down;—he plays the piece to the square intended, and the little knob rises up;—and thus the game proceeds.

* This last addition was made by M. de Kempelen, previous to his second tour.

This illustration will afford the reader a more perfect notion than has yet been given of the mode of working the automaton. We have nothing more to say respecting the mechanical part of this strange deception, and therefore beg to conclude our notice with a translation of the latter half of M. de Tournay's very amusing article.

M. Maelzel having entered into an agreement with M. Mouret, a very eminent chess-player, to conduct the internal arrangements of the automaton, the two confederates set out on a tour for the purpose of spreading the fame of the automaton, and reaping the benefit of the deception in many towns of England, Scotland, and Holland, where it was yet only known by report. The most complete success attended this journey. Wherever they went, spectators crowded to the exhibition to witness the triumphs of the automaton, who always kept his ground against his antagonists, and came off victorious, in spite of the advantage which he permitted to his opponent in giving him the pawn and move.

The exhibitor and his assistant went on for some time in perfect harmony: accounts were settled between them at every halting-place, and each was perfectly satisfied. It happened, however, on one of these occasions that M. Maelzel remained debtor to his assistant for a considerable sum, and as weeks and months passed by he still had some pretext for omitting its payment. At length a year had passed, without producing the desired settlement, and M. Mouret, weary of this delay, found the means of frightening his companion into his proper duty.

The automaton was then at Amsterdam: the king of Holland sent one morning to engage the exhibition-room, at the same time ordering a sum equal to three thousand francs, to be paid to M. Maelzel. The latter went joyfully to announce the good news to his associate —they breakfasted together, and were delighted at the thought of entering the lists with a crowned head. M. Maelzel then hastened to make such preparations as should make the exhibition as brilliant as possible. The performance was to commence at half-past twelve at noon. Twelve o'clock arrives, and it is time for M. Mouret to take his station in the chest. But he has not yet arrived, and M. Maelzel hastens to find out the cause of the delay. What is his surprise to find Mouret in bed, and seized with a convulsive trembling. "What do I see? what is the matter?" exclaimed Maelzel. "I have a fever," said his artful assistant.—"Why, you were very well just now!"—"Yes, but this is a sudden attack."—"The king will be here presently."—"He must go back again."—But what can I say to him?"—"Tell him the automaton has got the fever."—"No more of this folly."—"I don't wish to joke with you."—"Then pray get up."—"Impossible."—"Let me call a physician."—"It is of no use."—"Is there no means of subduing this fever?"—"Yes, one only."—"What is it?"—"To pay me the 1500 francs you owe me."—"You shall have them . . . this evening?"—"No, no, this moment."—M. Maelzel saw too plainly that there was no alternative, and went to fetch the money. The cure was wonderful; the automaton was never so attractive before. The King did not actually play, but he advised his Minister of War, who played for him. The pair were completely beaten by the automaton, but all the blame of the defeat was, of course, thrown upon the Minister.

Another anecdote is related of the automaton to the following effect. In one of the towns of Germany a conjuror had been exhibiting his various tricks, to the delight and amazement of the inhabitants, when the arrival of the automaton presented a still more powerful object of attraction, and left the poor fellow without an audience. Annoyed and jealous at the reputation of his rival, he went to be himself a witness of the new performance, and from his own experience in the art of deception he felt convinced that the chest contained a hidden player.

He therefore began all at once to raise a cry of "Fire," in which he was seconded by one or two companions. The spectators were seized with the greatest alarm, in which, strange to say, the automaton participated, and in his fright upset his adversary and tottered about as if he were mad. Happily, M. Maelzel, who preserved his presence of mind, was able to push him behind a curtain, where he soon became quiet, and recovered his usual dignified bearing. The alarm of fire was soon discovered to be false, and the conjuror did not gain anything by his attempt to undeceive the company. After this event M. Maelzel, in giving directions to a candidate for the office of concealed player, was accustomed to say, "If you hear a cry of fire, don't stir; I will come to your help."

The automaton was afterwards taken to North America, where it was exhibited, during several years, in the principal towns of the United States and Canada. South America then received a visit from this wonder of the age, and after a due exhibition of its powers the automaton finally sank into oblivion, and was deposited in a lumber-room at New York, where we believe it still remains, never again perhaps to be the means of exciting curiosity or interest.

THE WATER SCORPION.

(*Nepa linearis.*)

THE genus Nepa includes a family of aquatic hemipterous insects inhabiting stagnant waters, and preying on the smaller water insects, &c. The largest species yet known is *Nepa grandis*, a native of Surinam and other parts of South America. This species far exceeds all the European animals of that genus in size. It measures three inches in length. It lives in the water, in the larva and pupa state, and attacks not only other water insects but some animals much larger than itself. Madame Merian represents this species, among her Surinam insects, as preying upon tadpoles and young frogs. Its colour is a dull yellowish brown, with a few darker shades or variegations: the under wings are of a semitransparent white colour, and the abdomen is terminated by a short tubular process.

The term *Nepa* is supposed by some to have been originally a misprint from *Hepa*, a Latin word applied to the scorpion. The structure of the individuals of this family shows their rapacious character: they seize their prey by the assistance of their fore-legs and convey it to the mouth, which consists of a short, but acute and strongly articulated proboscis, with which they are enabled to inflict a sharp wound.

The common water scorpion (*Nepa cinerea*) is a very frequent inhabitant of stagnant waters in our own country. It measures about an inch in length, and appears when the wings are closed entirely of a dull brown colour; but when the wings are expanded, the body appears of bright red colour above, with a black longitudinal band down the middle: the lower wings, which are of a fine transparent white, are decorated with red veins: from the tail proceeds a tubular bifid process or style nearly of the length of the body, and which appears single on a general view, the two valves of which it consists being generally applied close to each other throughout their whole length. The animal is of slow motion, and is often found creeping about the shallow parts of ponds, &c. In the month of May it deposits its eggs on the soft surface of the mud at the bottom of the water: they are of a singular shape, resembling some of the crowned seeds, with a coronet of seven bristles; and before they are deposited, these bristles closely embrace the egg next to them in the ovary like a sort of sheath, as if a chain of thistle seeds were formed by placing each in succession in the bosom of the down of the one next to it. As the mother insect deposits these eggs in the stems of aquatic plants, the bristles, which are partly left on the outside, are probably intended to prevent the aperture from being closed up, by the rapid growth of the plant. When the young are hatched, they are not more than an eighth of an inch in length. The larvæ and pupæ differ in appearance from the complete insect in having only the rudiments of wings, and being of a paler or yellower colour. The perfect insect breathes by means of a single pair of spiracles placed behind, the lateral spiracles being obsolete or rudimental. This insect flies only by night, when it wanders about the fields in the neighbourhood of its native waters in quest of prey.

Nepa linearis is an insect of a highly singular aspect, bearing a distant resemblance to some of the smaller insects of the genus Mantis and Phasma. It measures about an inch and a half from the tip of the snout to the beginning of the abdominal style or process, which is itself of equal length to the former part, and the whole animal is extremely slender in proportion to its length: the legs also are long and slender, and the fore-legs much longer in proportion than those of the second species, *N. cinerea:* the colour of the animal is dull yellowish brown, the back, when the wings are expanded, appearing of a brownish red, and the under wings white and transparent. It inhabits the larger stagnant waters, frequenting the shallower parts during the middle of the day, when it may be observed preying upon the smaller water insects, &c. Its motions are singular; it often strikes out all its legs at intervals with a kind of starting motion, and continues the exercise for a considerable time. Its eggs are smaller than those of *N. cinerea* of an oval shape, and furnished with two processes or bristles divaricating from the top of each.

According to Rösel the red eggs of a water-mite are deposited upon the bodies of the water scorpions; and, what is very remarkable, these eggs appear to increase in size during the process of hatching. De Geer remarked, that the water scorpions, when much infested with them, became gradually weakened as the eggs increased in size.

THERE's not a leaf within the bower;
There's not a bird upon the tree;
There's not a dew-drop on the flower;
But bears the impress, Lord! of Thee.

Thy hand the varied leaf designed,
And gave the bird its thrilling tone;
Thy power the dew-drop's tints combined,
Till like the diamond's blaze they shone.

Yes, dew-drops, leaves, and buds, and all,
The smallest, like the greatest things;
The sea's vast space, the earth's wide ball,
Alike proclaim Thee King of kings.—

MRS. OPIE.

LONDON:
JOHN WILLIAM PARKER, WEST STRAND.
PUBLISHED IN WEEKLY NUMBERS, PRICE ONE PENNY, AND IN MONTHLY PARTS, PRICE SIXPENCE.
Sold by all Booksellers and Newsvenders in the Kingdom.

THE

Saturday Magazine.

No. 592. SEPTEMBER 25TH, 1841. { PRICE ONE PENNY.

TURKEY AND THE TURKISH PROVINCES.

ANTIOCH.

ANTIOCH AND ITS VICINITY.

In the present series of articles we do not profess to adopt a strictly geographical arrangement of our subject, but to give *Sketches*, each of which will, to a certain degree, be complete in itself, while the whole collectively will illustrate the landscapes, the commerce, the buildings, the religion, the manners and customs, &c., of that widely-spread and highly-diversified empire over which the Grand Seigneur reigns. In the last two papers we selected Moldavia and Wallachia as the subjects of our notice. In the next two or three we shall visit some of the Asiatic towns of the empire, such as Antioch, Mecca, and Medina.

After having passed through Asia Minor, that remarkable peninsula which separates the Mediterranean from the Black Sea, we arrive at Syria, the eastern boundary of the Mediterranean. The manner in which this country is now governed was partly explained in the series of articles on the Syrian Coast, in our last volume, and we therefore shall here content ourselves with observing that Antioch is in the northern part of this region, within the pachalic of Aleppo or Haleb. This once splendid city, known as Antiocheia to the ancients, was the capital of the Syro-Macedonian empire, and being situated about midway between the cities of Constantinople and Alexandria, has since then been the centre of an extensive caravan trade. Its position, too, on the beautiful river Orontes, has placed it in favourable proximity to the Mediterranean.

With the exception of Jerusalem there is not perhaps another city of which the records present so sad a catalogue of revolutions and direful calamities as Antioch. Besides the usual plagues of Eastern cities, pestilence, famine, fire, and sword, it has been peculiarly subject to the most dreadful earthquakes. The city was founded by Seleucus Nicanor, 300 years before Christ, and was held under much tyranny and civil contest by the family of the Seleucidæ, until near the time of Pompey's conquest, and the reduction of the city and country beneath the Roman yoke, B. C. 65. It was in the reign of Trajan, in the year of our Lord 115, that we first find mention of those terrible earthquakes with which Antioch more than any other city has been visited. It is said that on that occasion Trajan, being at Antioch, narrowly escaped with his life, and the city was almost entirely destroyed; but the munificence of the emperor was employed to repair the misfortune, as far as it lay in his power, and the city soon resumed its ancient splendour and commercial aspect. It would be wearisome to our readers to go through the long list of disasters which befel this city,—sometimes a prey to famine and the plague; frequently overturned by earthquakes; now plundered by the Persians; then retaken by the Romans; at one time devastated by fire; at another time pillaged by the Turks; afterwards captured under circumstances of treachery, cruelty, and fanaticism by the Crusaders; and then soon after taken away from them, with great slaughter of the inhabitants, by the Sultan of Egypt, and thus remaining in a deserted and ruinous condition, till, with the rest of Syria, it passed into the hands of the Ottoman Turks, to whose empire it has ever since appertained.

We have the testimony of many travellers to the fertility of soil and richness of landscape which mark the vicinity of Antioch, even in its present neglected and degraded state, and we can therefore the better imagine what were its sources of wealth and delight in former days, when emperors were attracted by its pleasures, and Roman veterans were allured from their duties by the luxuries of this splendid city. The fo-

lowing is the description of the scenery on the banks of the Orontes, as given by Captains Irby and Mangles.

We now began to follow the banks of the river, and were astonished by the beauty of the scenery, far surpassing anything we expected to see in Syria, and, indeed, anything we had witnessed, even in Switzerland, though we walked nine hundred miles in that country, and saw most of its beauty. The river, from the time we began to trace its banks, ran continually between two high hills, winding and turning incessantly: at times the road led along precipices in the rocks, looking down perpendicularly on the river. The luxuriant variety of foliage was prodigious, and the rich green myrtle, which was very plentiful, contrasted with the colour of the road, the soil of which was a dark red gravel, made us imagine we were riding through pleasure-grounds. The laurel, laurustinus, bay-tree, fig-tree, wild vine, plane tree, English sycamore, arbutus, both common and andrachne, dwarf oak, &c., were scattered in all directions. At times the road was overhung with rocks, covered with ivy; the mouths of caverns also presented themselves, and gave a wildness to the scene; and the perpendicular cliffs jutted into the river, upwards of three hundred feet high, forming corners round which the waters ran in a most romantic manner. We descended at times into plains cultivated with mulberry plantations and vines, and prettily studded with picturesque cottages. The occasional shallows of the river, keeping up a perpetual roaring, completed the beauty of the scene, which lasted about two hours, when we entered the plain of Suadeah (Seleucia,) where the river becomes of a greater breadth, and runs in as straight a line as a canal."

Under the Macedonian kings of Syria the worship of the goddess Daphne was conducted in a grove near Antioch, which had been planted by Seleucus, the founder of the city. This beautiful grove of laurels and cypresses, with its temple and oracle, was long the most fashionable and splendid place of resort for Pagan worship in the East. The conduct of the people of Antioch seems to have closely corresponded with the instructions they received from the debasing rites of Pagan worship, for they are described to us as luxurious in life and licentious in manners. In such a soil as this we should scarcely have hoped to find Christianity taking root; but, nevertheless, we find on the arrival from Cyprus and Cyrene of certain converts who had fled from persecution to take refuge in Antioch, great numbers of the people of that city listened to the tidings they brought, believed the Gospel message, and embraced the religion of Christ. The name of *Christian*, first bestowed on the disciples in that city, was not applied to them in honour of their Lord, or simply to mark the distinction between them and others who adhered to paganism, but it was applied to them as a term of contempt and of the bitterest reproach; yet, notwithstanding the opprobrium attached to that name, many were found willing to bear it, and to separate themselves from the vices and profligacies of their city, that they might tread in the steps of their self-denying Lord. To this they were encouraged by the examples of Paul and Barnabas, who laboured during a whole year, by preaching and exhortations, to establish the new converts in the knowledge and belief of the truth. Thus was formed out of a luxurious and idolatrous people a community of true believers, at first comparatively few in number, but after a while increasing to a great extent, and becoming an illustrious and influential body, eminent for charity of spirit and consistency of conduct. It would detain us too long, to speak of the prosperity and increase of this church in the time of Chrysostom, at the latter part of the fourth century after Christ. It was a *worldly* prosperity, that was too great for the *spiritual* welfare of the Christians, and which appears to have prepared the way for succeeding apostasy.

We must now proceed to describe the remaining traces of former greatness, which were visible in this place, before the earthquake of 1822 laid it entirely in ruins. At that period a large part of the immense walls which formed the boundary of the ancient city were still standing. They were from thirty to fifty feet high, fifteen feet thick, and flanked by numerous square towers, and though much ruined, they distinctly marked the ancient boundary. There are different accounts as to the space inclosed by them. Mr. Buckingham says that they have a circuit of nearly four miles, but his statement is far below that of the more ancient authorities. The buildings at Antioch, at the period alluded to, were of a mean description, and no traces remained of architecture worthy of the "Queen of the East," as this city was once proudly named. The language spoken there was chiefly Turkish, though there were a few Christian families remaining, and some Jews. The Christians were accustomed to assemble for prayer in one of the caves or excavations in the rock, which are numerous in Antioch, and which appear to have been the ancient Necropolis*, or cemetery.

Great numbers of medals and engraved stones have been found in the neighbourhood of Antioch, especially during the winter season, when the ground has been laid bare by heavy rains. The most interesting are those of the Seleucidæ, the founders and beautifiers of the ancient city: there are also many of the period of Julius Cæsar and Augustus, with great quantities of Phœnician coins.

The modern name of Antioch is *Antakia*: it is very little known to the western nations: the attacks of its ancient *subterranean* enemy have reduced it almost entirely to ruins, and everything connected with that once proud and stately city must now be reckoned with the past.

* This word, translated *literally*, means "the city of the dead."

IN TIMES OF DISTRESS AND DANGER.

O God, that madest earth and sky, the darkness and the day,
Give ear to this Thy family, and help us when we pray!
For wide the waves of bitterness around our vessel roar,
And heavy grows the pilot's heart to view the rocky shore!
The cross our Master bore for us, for Him we fain would bear,
But mortal strength to weakness turns, and courage to despair!
Then mercy on our failings, Lord! our sinking faith renew!
And when Thy sorrows visit us, oh! send Thy patience too.—

BISHOP HEBER.

On the whole, we make too much of faults; the details of the business hide the real centre of it. Faults? The greatest of faults, I should say, is to be conscious of none. Readers of the Bible, above all, one would think, might know better. Who is called there the man according to God's own heart? David, the Hebrew King, had fallen into sins enough; blackest crimes; there was no want of sins. And, thereupon, the unbelievers sneer and ask, Is this your man according to God's heart? The sneer, I must say, seems to me but a shallow one. What are faults, what are the outward details of a life, if the inner secret of it, the remorse, temptation, true, often baffled, never-ended struggle of it, be forgotten? 'It is not in man that walketh to direct his steps.' Of all acts is not, for a man, *repentance* the most divine? The deadliest sin, I say, were that same supercilious consciousness of no sin;—that is, death; the heart, so conscious, is divorced from sincerity, humility, and fact; is dead: it is 'pure' as dead dry sand is pure. David's life and history, as written for us in those Psalms of his, I consider to be the truest emblem ever given of a man's moral progress and warfare here below. All earnest souls will ever discern in it the faithful struggle of an earnest human soul towards what is good and best. Struggle often baffled, sore baffled, down as into entire wreck; yet a struggle never ended; ever, with tears, repentance, true unconquerable purpose, begun anew. Poor human nature! Is not a man's walking, in truth, always that: 'a succession of falls?' Man can do no other. In this wild element of a life, he has to struggle onwards; now fallen, deep abased; and ever, with tears, repentance, with bleeding heart, he has to rise again, struggle again still onwards. That his struggle *be* a faithful, unconquerable one: that is the question of questions. We will put up with many sad details, if the soul of it were true.—CARLYLE.

ON CHESS. No. XVIII.

On the Powers of the Pieces and Pawns.

We have hitherto supposed the reader to be acquainted with, at least, the alphabet of chess; and have not hesitated to employ many of the technical terms used in the game. In the concluding articles of this course we hope to furnish some curious and useful information on subjects which are scarcely noticed in books devoted to the elements of chess-play.

We quite agree with the suggestion of a recent writer that the best method of learning the names of the pieces with their moves, and the manner of placing them at the beginning of the game, is to take an hour's lesson from a friend. Supposing this to have been done, and the student to be engaged in actual play, he will soon perceive that the various pieces have different degrees of power; that a rook is of more value than a bishop or a knight, and that a pawn is of far less value than a minor piece. He will find the queen to be a match for several pieces, and may be willing to part with a rook, a bishop, and a knight, in order to capture his antagonist's queen. The different values of the pieces and pawns are soon appreciated by the player, and he endeavours to regulate his exchanges accordingly; nevertheless, few persons have attended to the circumstances which decide these values, and although they are numerically expressed in most elementary works yet the computations which have led to them are always omitted.

If a general had two bodies of troops similar in most respects, but one of which, from any cause whatever, could occupy only a particular part of any hostile district; while the other was capable of occupying different posts at distant points by a series of rapid movements; the first body would, generally speaking, be far less valuable than the second. Now something analogous to this occurs at chess: those pieces which are capable of taking the greatest range over the board, and of making the most rapid movements, are the most valuable. For the hills and valleys of a contested country, we have nothing but black and white squares on the chess-board: therefore the test of strength which we are now considering is this,—how many squares of the chess-board can each piece or pawn command at one time?

In the first place, let us suppose the board to be cleared of its pieces and pawns, and one of each to be placed on it in succession. Choose a central square, such as the king's 4th, and ascertain how many squares a pawn or a piece can command from that position. A pawn placed on that square commands two others, being those to which it would move if it made a capture. The knight could move to any of 8 squares; the bishop to any one of 13 squares: the rook to 14: the queen to 27; and the king to 8.—We refrain from demonstrating these numbers, because the reader can easily satisfy himself on this point, by placing the pieces, one after another, on the king's 4th square, all the other squares being unoccupied. So far, then, as this mode of comparison is concerned, the power of the pieces to move on to other squares is

Pawn ... = 2
Knight... = 8
Bishop ... = 13
Rook ... = 14
Queen ... = 27
King ... = 8

But we have now to inquire whether this proportion exists for all the squares equally. A very little experience will show that it does not: every piece is diminished in value as it approaches the edges of the board; but this diminution is not the same for all. Let us select the king's rook's square, and notice the change in the powers of the pieces. Testing them one by one, we shall find that the number of squares to which each can move is—

Pawn ... = 1
Knight... = 2
Bishop ... = 7
Rook ... = 14
Queen ... = 21
King ... = 3

Here it will be seen, that while the rook has not changed in value, the others have done so considerably, but in different ratios. If we select any other square intermediate between the centre and the corner, we shall find the numbers to be higher than the one, and lower than the other of our two lists. The knight, for instance, commands 2, 3, 4, 6, or 8 squares, according to where he may be situated; the bishop commands 7, 9, 11, 13 squares; and so on. The correct way, therefore, of comparing the powers of the pieces in moving over the open board is to suppose a piece to be placed on every one of the sixty-four squares in succession—to add up the respective powers in all these positions,—and to divide the result by 64. This is a process analogous to that employed in every department of science for the obtaining of an *average* or *mean*, whereby small errors, variations, and discrepancies, become absorbed, or expunged by mutual correction in the general result; and it is perfectly applicable in the present case. This being done, it is found that the *average* power of each piece to move over the open board is nearly as follows:—

Pawn ... = $1\frac{1}{4}$
Knight... = $5\frac{1}{4}$
Bishop ... = $8\frac{3}{4}$
Rook ... = 14
Queen ... = $22\frac{3}{4}$
King ... = $6\frac{1}{2}$

Here the bishop is said to be $=8\frac{3}{4}$, which means that in consequence of his sometimes commanding as many as 13 squares, and at other times as few as 7, the average of the whole is $8\frac{3}{4}$; and so of the others —the rook being of constant value in any position on the open board.

We have now something like a test of the respective powers of the pieces, by which we begin to see the advantage of making exchanges of one for another. But still this is nothing more than a groundwork on which to found subsequent calculations, for we have proceeded on a supposition which never occurs in practice,—viz., an open or cleared board. The intermixture of pieces among each other over the field of contest, gives rise to variations so complicated and so remarkable that it has required great analytical research from distinguished men, to trace them to their sources. We strongly doubt whether this has yet been done correctly; but still an approximation to correctness has been made, and we will briefly notice the manner in which the inquiry has been conducted.

We have hitherto considered the board to be cleared, and have ascertained the relative values of the pieces on that supposition. Let us now suppose the pieces and pawns to be arranged for the commencement of a game, and view their positions before the game begins. Here we are struck with the remarkable fact that the pieces are almost powerless; it is true they act as defenders of the pawns which front them; but as to the power of moving, none of them possess it except the knight. The king, the queen, the bishop and the rook cannot move a step until some of the pawns are moved, and the knight owes his power of moving to his singular privilege of leaping over other pieces or pawns. So far, then, as the power of moving is concerned, a pawn is actually more powerful than even a queen at the commencement of the game.

Now in actual play, the relative powers of moving are *always* intermediate between the two extremes which we have mentioned, from the time of the first move being made, the constrained limits of the pieces begin to be broken, and their natural powers to be developed; but

on the other hand, these powers never attain the rank given to them by our first supposition, for the two kings—even if nothing else—are always on the board. The power of moving from square to square varies as the game proceeds, but not with equal rapidity: for instance;—the knight is powerful from the very beginning of the game, because whatever be near him he can leap over the intervening piece; while the rook is seldom of much use till several of the pieces and pawns are off the board. The rook increases his value by the *thinning* of the combatants more rapidly than any other piece, and therefore the ratio of his value is continually increasing.

It thus appears that the degree of openness of the board changes the proportionate value of the pieces, and it is difficult to fix a point where the power may be deemed an average between the highest and lowest. It is assumed, however, that we may suppose each party to have lost three pieces and four pawns, leaving four pieces and four pawns to defend the king. This is a fraction more than half the original forces, and may therefore be taken as an average or medium between the powers possessed by the respective pieces when the board is quite open, and when all the pieces are arranged for the commencement of a game.

If during the progress of a game, when about half the pieces and pawns have been removed by mutual exchanges, one of the players estimate the various powers of his remaining pieces, he may sometimes observe that a whole rank, or file of squares is blocked up by the intervention of one single piece or pawn, and moreover, that the intervening piece or pawn may be of his own party. In such a case his own troops actually stand in each other's way; and the less skilful the player, the more likely is this self-imposed blockade to occur. It may, and sometimes does happen in practice, that every square to which the knight's peculiar leap allows him to move, is occupied by one of his own forces; and the queen, after making a capture, is frequently found to be so hemmed in by inferior pieces and pawns,—some of her own party, and others belonging to the antagonist, but well supported—that she becomes almost useless. If a piece be blocked up by one of the same party, the moving power in that direction is temporarily suspended, until the obstructing piece is removed; and if the obstructing piece be of the opposite party, but of inferior value, and *supported*, to capture that piece would be a loss, so that a passage in that direction may be deemed practically blocked out. From all this it will be seen, that the comparative values of the pieces, at and about the middle of the game, are greatly modified by the *liability of obstruction*, arising from the intervention of a piece belonging to the same party, or of a supported inferior piece of the opposite party.

Other variations in value will be noted in our next article on this subject.

FRUITS OF SINGAPORE.—The boats are seen entering the harbour before sun-rise, laden with pine-apples and other fruits: the former, although not equal to those of the English hot-house, bear no comparison, from their superior flavour, with the same fruit of either East or West Indian growth. Here they are in such abundance that captains of ships frequently purchase them by boat-loads to scour their decks, which from the acidity they possess, they have the property of whitening. But here, and here only in its prime, is found the most delicious of all fruits, the mangostein, which, once tasted, is never forgotten; and often, on a sultry Eastern morning, the traveller recollects the baskets of these cool and luscious fruits that were here his morning meal.—*Six Months with the Chinese Expedition.*

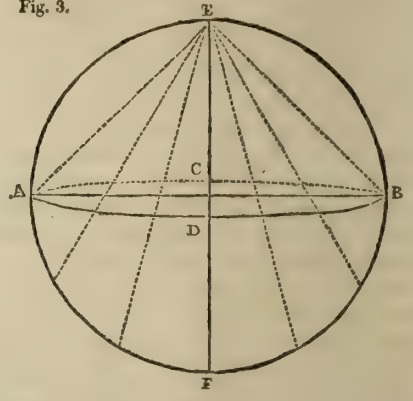
THE only difference between the camel and the dromedary is, that the latter is trained for riding, and the former for burdens. The distinction, at the most, is the same as between a riding-horse and a pack-horse; but, among the Bedawîn, so far as our experience went, it seemed to amount to little more, than that the one had a riding-saddle, and the other a pack-saddle.—ROBINSON'S *Palestine.*

MAPS AND MAPPING: III.

THE STEREOGRAPHIC AND THE GLOBULAR PROJECTIONS.—DEVELOPMENT—CONICAL—CYLINDRICAL.—MERCATOR'S PROJECTION.—CONCLUSION.

3. THE STEREOGRAPHIC Projection of the sphere is so named, because the *delineation* is supposed to be made by taking a view through the *solid* sphere. In this projection, the eye is considered to be placed at the surface of the sphere, as at E; hence, it views the concave of the opposite hemisphere A F B, through the plane of that circle A C B D, in the pole of which the eye is placed

Fig. 3.



This projection is therefore the reverse of the orthographic: in the latter the hemisphere was thrown down upon the plane of a great circle; but, in the stereographic method, the hemisphere (A F B) is brought up to this plane, (A C B D,) which is the plane of projection.

Although, as is evident from the foregoing figure, all the various places on the concave hemisphere A F B suffer considerable contraction in being represented on the plane of projection A C B D, yet the advantages offered by this method of projection have brought it more into use than the methods before mentioned. It is especially calculated for maps of the world, as usually made in two hemispheres, from the circumstance of the representation being so little distorted at the extremities; as may be seen, in the figure, by tracking up the several parts of the concave circumference A F B to the plane of projection above.

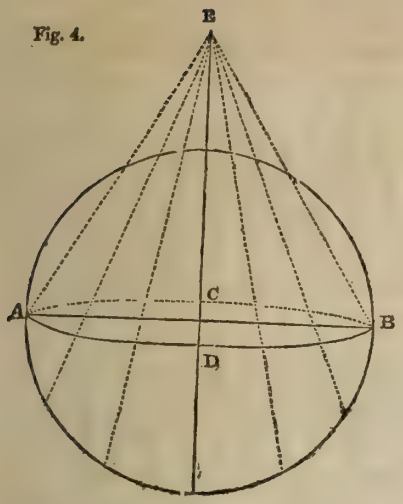
This projection is also preferable, on account of the meridians and parallels intersecting each other at right angles, as they do on the globe. Its construction also is less difficult than that of others; since all the great circles of the sphere are either circles or straight lines in the projection. The meridian of 20° W. is the one usually selected by English geographers for the plane of projection in these maps for the world, because this meridian passes very nearly between the eastern and western continents, which therefore occupy their respective hemispheres.

4. THE GLOBULAR projection is a modification of the last, and is so named, because, like the stereographic, it is chiefly used for making maps of the world.

We have already shown that the stereographic projection insures a general similarity in all its parts, and enables us to project at least a hemisphere in a single map, without any violent distortion of the configurations on the surface from their real forms. But as in the orthographic projection the borders of the hemisphere are unduly crowded together, in the stereographic their projected dimensions are, on the contrary, somewhat enlarged in receding from the centre. This will be visible by inspecting the previous figure.

To meet this inconvenience, and to give a general equability to the perspective, the globular projection was originated by M. de la Hire, on the following principle:—He supposes the eye to be placed at a distance

Fig. 4.



from the sphere equal to the sine of 45°; that is, if the diameter of the sphere be equal to two hundred, the distance of the eye from the nearest point of the circumference would be $70\frac{7}{10}$. Some further modification was subsequently deemed desirable, in order that the meridians might intersect the equator at equal distances. This condition is very nearly fulfilled when the distance of the eye is $59\frac{1}{2}$, the diameter being 200, as before.

In this projection, therefore, the arcs of the sphere, and their projections, are very nearly proportionate to each other; or, in other words, equal spaces on the spheric surface are represented by equal spaces on the map, by an approximation as near the truth as can be.

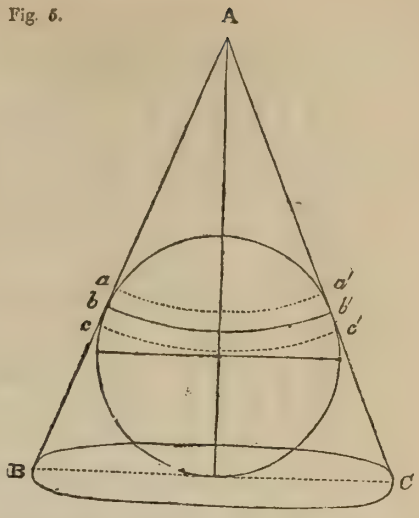
When the eye is placed at the surface of the sphere, as at E, (fig. 3,) all the meridians and parallels are represented on the plane of projection, as they really are on the surface of the globe itself; they are all circular: but, when the eye is placed out of the surface, as at E, (fig. 4,) the meridians and parallels lose the form of circles, and become ellipses, in proportion to the distance of the eye from the surface of the sphere. The meridians and parallels in the globular projection are, therefore, in reality, ellipses. They are not, however, usually drawn so; geographers contenting themselves with circular, in place of elliptical curves; and, as the deviation is excessively small in this projection, the practical utility of the map is not affected.

II. Projection, when referred to the principle of DEVELOPMENT, is understood to be the unfolding, or spreading out, of the spherical surface on a plane. This, however, first supposes the sphere to be converted into a cone or a cylinder;—these being the forms, portions of which most resemble portions of a sphere, and which, at the same time, are susceptible of the required development.

The methods of projection before explained, are usually employed in the representation of a hemisphere; but are seldom used in delineating the geographical features of a single country: for these the method of *development* is commonly employed, which is of two sorts,—the Conical and the Cylindrical.

1. It is a known property of a *cone*, that its curve surface can be expanded into a plane; hence, any figure delineated on it, can always be exhibited exactly in all its dimensions on a plane surface. Now, a part of the surface of a sphere contained between two parallels of latitude, not very remote, will not differ much from the surface of a frustrum of a cone, that touches the sphere in the parallel midway between them. Hence, it will be seen that, in the conical projection, the sphere is supposed to be circumscribed by a cone A B C, which touches the sphere at the circle intended to represent the middle parallel of the map,—*b b'*. If the points on the sphere be now projected on the cone by lines drawn from the

Fig. 5.



centre, it is evident that, in a zone extending but a short distance on each side of the middle parallel, as the zone included between *a a'* and *c c'*, the points on the cone will very nearly coincide in position with the corresponding ones on the sphere. All the delineations having been thus made, the cone is then conceived to be unrolled, or *developed*, on a plane surface.

If the map be made to extend much above or below the middle parallel, the distant parts will be very much distorted. To remedy the defects of this projection, various modifications have been suggested and used; but into these our limits will not allow us to enter.

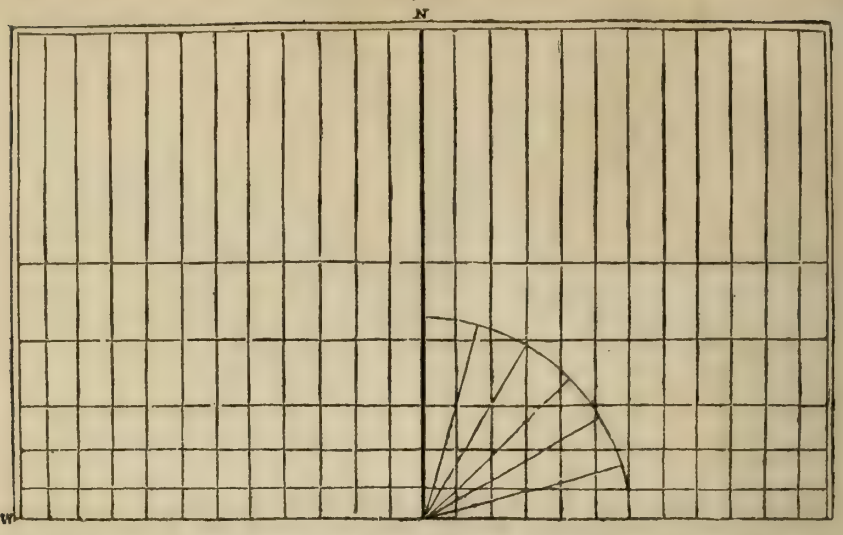
We cannot help observing, therefore, that the conic method of development is best adapted to represent countries to any extent in the difference of longitude, or round the whole circumference of the earth, if required to only a certain extent in difference of latitude. This projection is simple and easy of construction, owing to the facility of describing the parallels of latitude in concentric circles, and the meridians in straight lines.

At the first view of the case it might be difficult to conceive that the surface of the globe could be represented by a part of the surface of a cone; yet we may easily produce the surface of a cone from a piece of paper cut into a circular form or base; and we could as easily conclude that, if a cone, about twice the height of the semi-diameter of the globe, were to be conceived as standing on the same base with the hemisphere, namely on the equator, the surface of such a cone would in part lie within the surface of the globe, and then that the surface of the globe, at so small a distance from the surface of the cone, might be very easily projected or delineated on it; and in such a case, the projection of the countries and their bearings, distances, &c., will be very nearly the same on the surface of the included part of the cone, as on that of the globe itself.

2. From what has been said of the cone, it will be easily seen that a *cylinder* may be applied to the sphere in a similar manner, and that a zone of very limited extent in latitude may, without very material error, be developed on a cylinder. The peculiarity of this method is, that the meridians, as well as the latitude-circles, are projected in parallel straight lines; which circumstance makes it very applicable to nautical purposes, and from which originates the ingenious method, called *Mercator's projection*, which is now so universally adopted in our charts, and to which, in the last place, we must briefly allude.

The line on which a ship sails, when directing her course obliquely to the meridian, is on the globe a spiral; since it cuts all the meridians through which it passes, at equal angles. Owing to this and other causes, a map constructed on the principles of the spherical projections,

Fig. 6.



was found to be very inadequate to the wants of the navigator. Mercator justly considered, that mariners do not employ maps to know the true figures of countries, so much as to determine the course they shall steer, and the bearing and distance of those points or places which lie near their track; and this projection is the result of his efforts to secure to the seaman these desirable ends. The merit of this work is thought by many to be more justly due to Wright; for, although Mercator published his first chart in 1556, he omitted to explain the principles of it; and his degrees of latitude did not preserve a just proportion in their increase towards the poles. Wright, in 1599, corrected these errors, and explained the principles of his improved construction, in which the degrees of latitude on the chart were made to increase towards the poles, in the same ratio as the degrees of longitude decrease on the globe; by which means, the course which a ship steers by the compass, becomes on the chart a straight line; yet, the various regions of the map, however distorted, preserve their true relative bearing, and the distances between them can be accurately measured.

The modes of projection which we treated of, before entering upon those of Development, may be considered natural ones; inasmuch as they are really perspective representations of the surface of half the globe on a plane. Mercator's is entirely an artificial one, representing the sphere as it cannot be seen from any one point, but as it might be seen by an eye carried successively over every part of it. In it, the degrees of latitude and longitude bear always to each other their just proportion; the equator is conceived to be extended out into a straight line, and the meridians are straight lines at right angles to it, as in the figure. Altogether, therefore, the general character of maps on this projection is not very dissimilar to what would be produced by referring every point in the globe to a circumscribing cylinder, by lines drawn from the centre, and then unrolling the cylinder into a plane. Like the stereographic projection, it gives a true representation, as to form, of all the parts, but it varies greatly in scale, in its different regions; the polar portions in particular being of necessity extravagantly enlarged, as the upper part of the figure shows: and the whole map, even of a single hemisphere,—that is, from pole to pole. or 180°,—not being comprisable within any finite limits.

Mercator's chart may be produced by development in the following manner;—Conceive that a sphere, with the meridians and parallels and countries delineated on it, is inclosed in a hollow cylinder, and that the axis of the sphere coincides with that of the cylinder. Imagine now that the sphere is expanded in its dimensions, just as a soap-bubble is produced by blowing air into it, or as a bladder would swell in all directions by inflation, the parts always stretching uniformly;—the meridians will then lengthen in the same proportion as the parallels, till every point of the expanding spherical surface comes into contact with the concave surface of the cylinder: the meridians will at last become straight lines, and the parallels circles on that surface; the former in the direction of its length, and the latter parallel to its base, which is the equator, W. E. Suppose now the cylinder to be cut open along one of the meridians, and spread into a plane, the surface thus produced will be Mercator's chart.

In works on navigation are to be found tables of "Meridional parts," by means of which the meridians of these maps may be duly divided for drawing the parallels of latitude and the positions of places accurately laid down.

Thus we have endeavoured to lay before our readers the fundamental principles on which the art of map-making has for several centuries been built up. If he should be pleased with the subject, he may now advantageously have recourse to such treatises of this sort as show up, in all its details, the entire process of constructing maps and charts of all kinds.

IN the infancy of a science there is no speculation so absurd as not to merit examination. The most remote and fanciful explanations of facts have often been found the true ones; and opinions, which have in one century been objects of ridicule, have, in the next, been admitted among the elements of our knowledge. The physical world teems with wonders, and the various forms of matter exhibit to us properties and relations far more extraordinary than the wildest fancy could have conceived. Human reason stands appalled before this magnificent display of creative power, and they who have drunk deepest of its wisdom will be the least disposed to limit the excursions of physical speculation.

The influence of the imagination as an instrument of research, has, we think, been much overlooked by those who have ventured to give laws to philosophy. This faculty is of the greatest value in physical inquiries: if we use it as a guide, and confide in its indications, it will infallibly deceive us; but, if we employ it as an auxiliary, it will afford us the most invaluable aid. Its operation is like that of the light troops which are sent out to ascertain the strength and position of an enemy. When the struggle commences, their services terminate; and it is by the solid phalanx of the judgment that the battle must be fought and won.—SIR DAVID BREWSTER.

RURAL SPORTS FOR THE MONTHS.

SEPTEMBER.

Nor on the surges of the boundless air,
Though borne triumphant, are they safe; the gun,
Glanced just, and sudden, from the fowler's eye,
O'ertakes their sounding pinions: and again
Immediate brings them from the towering wing,
Dead to the ground: or drives them wide dispersed,
Wounded and wheeling various, down the wind.
These are not subjects for the peaceful Muse,
Nor will she stain with such her spotless song;
Then most delighted when she social sees
The whole mixed animal-creation round
Alive and happy. THOMSON.

On the first day of the present month, the shooting of Partridges becomes lawful, and is joyfully entered on by a vast number of persons throughout the country. It generally forms the young shooter's first lesson at game, and in order to be successful he carefully notes the habits of the bird at different seasons, and under different sorts of weather, &c.

In the zeal for destruction which seems to pervade all ranks and classes of society at this particular period, it may seem out of place to speak of the usefulness of the animals which form the especial object of pursuit, or to offer a recommendation in their behalf, that the war against the species may be regulated, and kept within due bounds, so that man may not reduce their numbers to his own injury. In the case of the partridge, as well as in that of many other birds, it is fully believed that if we understood their habits aright, we should often be disposed to cherish that which we are now zealous to destroy.

The common partridge seems in an especial manner to belong to an agricultural country. Wherever the soil is extensively cultivated, there it thrives and multiplies, and with all the persecutions to which it is subjected, we never find these birds driven to make their permanent abode in wild and solitary places. Their pertinacious adherence to the same turnip-field, or to the same clover-matted stubble, has aptly been comp red to that of a mountain-tribe of human beings clinging to their fastnesses in a war of extirpation.

Now it cannot be supposed by any reflecting mind that the habits with which these birds are endued, their attachment to a cultivated soil, and the rapid multipli cation of their species, are without their particular use and end in the economy of Nature. There must be a good design in it, and one in which the welfare of the human race is concerned. It has been well said that "that which invariably accompanies improvement, is, we may rely on it, necessary to improvement;" and it is not difficult to see that it is so in the present case. All birds that feed upon the ground live almost exclusively upon *insects*, under which general name we include many small living creatures, to whom the application of the term, in its strict sense, does not belong. And although the partridge also feeds on grain, seeds, bulbous plants, &c., and thus partakes of the produce of the cultivated field with man, yet the service it renders in consuming the overplus of insects may be set against this; and if it could be fairly estimated would, we doubt not, be found far more considerable than the injury sustained.

The time of the year, the weather, and many other circumstances influence the practice of the partridge-shooter. The usual way of proceeding in search of these birds in September is to try the stubbles first, and then the potato and turnip-field, where the birds frequently bask when such fields lie contiguous to the stubble. When the shooter *breaks* a covey, he proceeds without loss of time to search after the dispersed birds, for the parents begin to call almost immediately on their alighting, the young ones answer, and in less than half an hour, if not prevented by the presence of the shooter and his dogs, the whole of the covey will be re-assembled, probably in security in some snug corner, where the shooter least thinks of looking for them. Dispersed birds afford what is called the "best sport" to the shooter, for while under the protection of the old ones they are guided by the superior sagacity and watchfulness of their parents, but when deprived of them, they are truly discomfited, and do not know whither to run for safety: as the season advances, birds are longer in re-assembling. In this respect much also depends on the weather and the time of the day. The habits of partridges at the early part of the season, are somewhat as follows.—Just before sunrise they run to a brook, spring, or marsh, to drink; from which place they almost immediately fly to a field where they can find plenty of insects, or to the nearest corn or stubble field, when they will remain, according to the state of the weather, and other circumstances, until nine or ten o'clock, where they go to bask. The basking-place is frequently on a sandy bank-side, facing the sun, whe the whole co vey remains huddled together for several hours. About four or five o'clock they return to the stubbles to feed, and about six or seven they go to their *jucking-place*, a place of rest for the night, where they remain closely packed together until the morning. Their times of feeding and basking vary according to the length of the days. While the corn is standing, partridges will often remain in it the whole day. The uncertainty as to where partridges may be found increases after the middle of October. At this time if much disturbed they will occasionally take shelter in the woods, where they may be flushed one by one.

The number of birds in a covey varies much, but is considered to average from ten to fifteen. The length of flight of a covey also differs according to the nature of the ground. In a fertile farm in a corn country, the sportsman has not any great distance to travel before he comes again upon his covey, sometimes the mere passing of a hedge will enable him to reach them, but in a very open country, where the birds have been used to a much more extensive range, a mile, or even more, has been traversed in following their flight.

The partridge of Britain (*Tetrao Perdix*, Linn.) is of two kinds, the common, or ash-coloured (*cinerea*) and the Guernsey or red-legged (*rufa*); but the latter is almost entirely confined to the Channel Islands.

The common partridge is so well known that it is almost unnecessary to describe it. The weight of a full-grown male bird in good condition is about fifteen or sixteen ounces, that of the female, about two ounces less; the length of the entire bird is about thirteen inches, the breadth twenty. The bill, and naked parts, are of a bluish-gray colour, with the exception of a red spot behind the eye. The general colour of the plumage is brown ash, elegantly mixed with black, and each feather is streaked down the middle with buff-colour. The feathers of the throat, cheeks, and over the eyes are reddish-orange. The legs of the male are furnished with a blunt spur, or knob behind, and the breast with a crescent of a deep chesnut colour. The feathers of the female are in general of a duller hue than those of the male, but it is only the experienced sportsman that can distinguish the difference of sex when the birds are on the wing. Those who are able to do this always aim at the male bird, as there is a greater number of male partridges, than of females.

The age of partridges is discovered by the bill and legs, which are yellowish when young, but become of a dark bluish-white as they increase in age. Another method is, by examining the appearance of the last feather of the wing, which is pointed after the first moult, but in the following year is quite round. The size, and plumage of the partridge, however, is much affected by local circumstances: the finest birds are found in those situations where cultivation has been the most successful, while in districts that are comparatively unproductive

and sterile, the appearance of the bird has occasionally led to the opinion of its being a distinct species, or at least a variety.

Partridges are the most prolific of the wild gallinidæ, the eggs being seldom fewer than twelve in number, while they are often as many as twenty, and have on several occasions greatly exceeded that number, as the following instances will show. In the year 1793 a partridge nest was found in a fallow field on the farm of Mr. Pratt, near Ferling, in Essex, with thirty-three eggs; twenty-three of the eggs were hatched, and the birds went off; the number of the eggs was ascertained before hatching to decide a bet laid by a person who refused to credit so unusual a production. In order to cover the whole of the eggs, the female had piled up seven in a curious manner in the centre. A nest was also found in 1798, at Elborough, Somersetshire, in a wheat-field, with twenty-eight eggs. Mr. Daniel tells us that upon the farm of Lion Hall, in Essex, belonging to Colonel Hawker, 1788, the following incident was known to many persons. A partridge, instead of forming her nest as usual, on the ground, chose the top of an oak pollard, and this tree, too, had one end of the bars of a stile fastened to it, so that the passengers along the footway, in getting over the stile, disturbed and uncovered the bird before she began to sit close. The farmer, whose name was Bell, apprised Mr. Daniel of the circumstance, which he laughed at as being the report of the work-people, and said it was only a wood pigeon they had mistaken for a partridge; but the former, who had killed some hundreds of partridges, so positively affirmed his having beheld the bird upon the nest on the tree, and also having told the eggs to the number of sixteen, that Mr. Daniel was persuaded to ride to the spot, where the partridge was seen sitting: in a few days she hatched sixteen eggs; and her brood, scrambling down the short and rough boughs which grew around the trunk of the tree, reached the ground in safety.

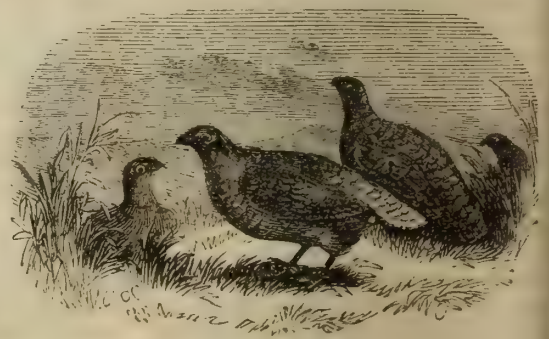
The nest usually made by the partridge is merely a hole scratched in dry mould, or a few bents and decayed leaves strewed roughly in the hollow made by an ox or horse's hoof. Sometimes it is formed on hedge-banks, sometimes in corn or grass, frequently in clover. It is often found beneath the shelter of some low bush or tuft of grass. The eggs are generally laid about the latter end of May; they are of a greenish-gray colour, and the female sits so remarkably close, that not only does she not rise when her nest is approached, but it is difficult to drive her from it. She is at this time very bold in driving off her winged foes; and magpies, cranes, and other plunderers of nests, are valiantly opposed in their depredations. The male partridge does not share the labour of incubation, but is attentive to his mate, and joins her in defending the brood, and uses many arts to decoy visitors away from the nest. Frequent and heavy rains during the time of laying and incubation are very unfavourable; many of the eggs are chilled or drowned, and if the weather is wet when the young first leave the shell the cold benumbs the little strength they have in their legs, and they soon fall and die, even while their mother is leading them forth in search of food.

The affection shown by the partridge for its young is peculiarly strong and lively. Both parents seem equally assiduous, after the birds are hatched, in leading them out, and directing them to their proper food, and in protecting them by every means in their power from their enemies. Insects, larvæ, and eggs, are the food of young partridges; ant-eggs, in particular, seem necessary to their existence. At this period the male and female frequently sit close together and cover the young with their wings, exhibiting such evident marks of parental tenderness, that few persons would willingly disturb or injure them in such a situation. When they are accidentally discovered, or alarmed by a dog, they act in a manner thus described by an eye-witness:—

The male first gives the signal of alarm by a peculiar distressful cry, throwing himself at the same moment more immediately in the way of danger, in order to mislead the enemy; he flies, or rather runs along the ground, hanging his wings and exhibiting every symptom of debility, whereby the dog is decoyed by a too eager expectation of an easy prey, to run further from the covey. The female flies off in a contrary direction, and to a greater distance, but soon after secretly returning she finds her scattered brood closely squatted among the grass, and collecting them with haste by her jucking she leads them from the danger before the dog has had time to return from the pursuit.

Partridges are easily tamed, but do not breed in confinement. An instance is given of one of these birds becoming so familiar in a clergyman's family where it was reared, that it would attend the parlour at breakfast and other times, and would afterwards stretch itself before the fire, seeming to enjoy the warmth as if it were its natural bask on a sunny bank. The dogs of the house never molested it, but at last it fell under the paws of a strange cat and was killed. The eggs of partridges are frequently collected, and hatched under domestic hens, the broods being afterwards turned into preserves for the purpose of stocking them. In this case, the food of the young birds should at first consist of the eggs of the small ant; afterwards they should be fed with fresh curds mixed with lettuce, chickweed, or groundsel. It will be some time before they can eat grain readily.

In Franklin's *Constantinople* we meet with an account of the method practised by the Arabs of Monnt Lebanon in taking the partridge, so that "to hunt the partridge upon the mountains" is still, as in Scripture times, a custom of that country. The Arabs make a slight square frame of wood, of about five feet in height, over which they stretch an ox-hide perforated in three or four places. The ox-hide is moved quietly in an upright position, and the Arab concealing himself behind it, is hidden from the view of the game, which unsuspectingly allow the sportsman to come within shot of them. The Arab, seeing through one of the apertures, quietly protrudes the muzzle of his long musket through another hole, and firing upon the birds, as they feed in coveys upon the ground, kills a great many of them.



PARTRIDGES.

In all these, (the articles of faith comprised in the creed,) the sky of my belief is serene, unclouded by doubt. Would to God that my faith, that faith which works on the whole man, confirming and conforming, were but in just proportion to my belief, to the full acquiescence of my intellect and the deep consent of my conscience! The very difficulties argue the truth of the whole scheme and system for my understanding, since I see plainly that so must the truth appear, if it be the truth.—COLERIDGE.

LONDON:
JOHN WILLIAM PARKER, WEST STRAND.
PUBLISHED IN WEEKLY NUMBERS, PRICE ONE PENNY, AND IN MONTHLY PARTS, PRICE SIXPENCE.
Sold by all Booksellers and Newsvenders in the Kingdom.

THE

Saturday Magazine.

No. 593. SUPPLEMENT, SEPTEMBER, 1841. { PRICE ONE PENNY.

THE GODDESS OF FORTUNE.

Found by Mr. Gavin Hamilton, near Rome, and now in the British Museum.

A BRIEF HISTORY OF THE FINE ARTS. No. II.

Section IV. Roman Sculpture.

We have already stated that the decline of Grecian sculpture commenced at the period of the dismemberment of the Macedonian empire, and extended through nearly two hundred years. The fatal blow to its existence was given by the success of the Roman arms. In the year 146 B.C. the celebrated city of Corinth was sacked by the conquerors, and deprived of the treasures of art which had been accumulating for ages. Athens was subdued in the year 86 B.C., and other cities sharing the same fate, the glory of Greece was extinguished, and her splendid works of art were left to the mercy of a people little qualified to appreciate their merit.

The character of the Romans as the conquerors of the world is so little in accordance with the cultivation of the milder arts of peace that we are not surprised to find sculpture, in all ages of their history, existing rather as a plant of foreign growth, partially cultivated in their soil, than as an indigenous production of their own clime. The passion for conquest was too prevailing to allow of enthusiasm for art. The works of Greece and Etruria were valued and admired as the fruits and trophies of their victories, but were not viewed in the light of instruments by which their own moral condition might be improved, and the barbarism of their nation in some measure removed. At the conquest of Syracuse, indeed, we find some appearance of the true feeling of admiration for the arts in the reply of Marcellus, who was accused of unjustly robbing the devoted city of its marble treasures. He declared that he had done so for the good of Rome, that the public edifices might be embellished, and that his own countrymen might acquire a taste for the arts and elegance of the Greeks. But although each victory was followed by the accession of new specimens of art to Rome, and although among these specimens, some of the most exquisite examples of Grecian performances were brought before their eyes, we do not perceive a taste for sculpture to have been awakened, in any measure corresponding with the advantages thus offered to them in the study of the best models of the art. The passion for forming collections, which is stated to have been extremely prevalent at the period to which we now allude, doubtless evinces considerable interest in works of art, and to that source do we probably owe the preservation of numerous specimens which would otherwise have been destroyed. But in the hands of the Romans sculpture soon degenerated, for they had inherited the works of Greece without any portion of the genius of their authors.

During the latter period of the Commonwealth, various sculptors of distinguished name were resident in different parts of Italy, and attempts were successively made by Sylla, Pompey, and Cæsar, to elevate the arts in Rome. They collected statues, gems, &c., and invited to the capital the yet remaining sculptors of Greece, by whose labours not only Rome itself, but many of the cities of Asia Minor, Spain, and Gaul were embellished.

But the chief impulse was given to sculpture as practised in Rome, during the sway of Augustus. The patronage of a monarch who could wield for his purposes the energies of the whole enlightened world, was necessarily of high advantage to the art. He carefully collected the finest works that could be procured, and fixed them in prominent situations in the city: no expense was spared to enrich the different collections of statues and paintings, but of all the sculptors, whose names have reached us as having flourished in this, the best age of the arts in Rome, every one is Greek, and chiefly Athenian. Pasiteles, Arcesilaus, Tropirus, and Evander, were some of the most eminent. "The arts, indeed, were revived, but the creative spirit which infuses life and soul into their productions, which stamps them with originality and thought, could not be recalled. The character of design and of execution is evidently the same as that by which the last era of sculpture in Greece is distinguished, or rather it is superior; for settled government, ample reward, and certain honour, not only drew to Rome every man of talent, but also awakened new powers. But in the finest specimens, there is no evidence of new energies, aided by the union of two separate modifications of talent; nor in the inferior, any exhibition of the more original, though it might be ruder, efforts of an aspiring and distinct national taste. Either or both of these effects would have been apparent, had there been native, prior to this importation of Greek, artists. On the contrary, everything in the sculpture of this era discovers a descent from a state of higher excellence; every touch exhibits rather what has been, than presages the eminence for which we are to draw upon futurity. From Augustus to Trajan, during a period of a hundred and forty years, the principles and practice of the Greeks continued to be observed, with such difference only as political causes can easily reconcile, but with a progressive decay. The most favourable periods during this space were the reigns of Vespasian, Titus, and Trajan; for the reign of Nero, whose taste, like his morals, was corrupt, which Pliny has assumed as an epoch in the Roman school, was propitious to practice, not to improvement." (Memes.) The taste and energy displayed by Trajan gave new animation to the arts in Greece and Italy, and his reign, together with those of Hadrian and the Antonines, has been accounted the golden age of sculpture in Rome. The distinguishing characteristic of the art as it existed in Hadrian's time, was extreme minuteness of finish, indicating the labour more of the hand than of the mind. Mechanical dexterity was displayed in careful working with the file, the chisel, and the drill, and an air of studied and affected refinement pervaded the whole, to the utter extinction of all characteristic and natural expression. "For the sublime is substituted the difficult, the florid for the elegant; and in every remaining specimen, we can readily detect the taste which preferred a poetaster to Homer, or the laboured inanities of the Sophists, to the vigorous and manly eloquence of Demosthenes and Cicero." The style thus adopted has been considered sufficiently distinct from preceding methods to be called the Roman style of sculpture; and as exhibiting the national taste for display and ornament, it is, perhaps, rightly so denominated, although it appears tolerably certain that even during the flourishing period of the art, Greek, and not native, artists were employed on all the chief works of sculpture that were produced at Rome.

To the munificence of Hadrian, the arts were indebted for much of the prosperity which they enjoyed at the commencement of the second century. Several of the ancient temples which had fallen into decay, were, by his orders, restored, and others were erected in a style not unworthy of the best days of art. He completed the temple of the Olympian Jupiter at Athens, and enriched it with a statue of the god in gold and ivory, and with several other works of art, among which was a colossal statue of Hadrian himself. This prince had a splendid villa eighteen miles from Rome, the celebrated villa of Tivoli, where he collected together such a vast number of specimens of ancient art, that even up to the present time, every fresh excavation has led to the discovery of some object of interest. In 1771, Mr. Gavin Hamilton discovered the head, of which a drawing is given at p. 125. It was found in that part of Hadrian's villa called the Pantanella, and near it a similar head, but of inferior execution, which was deposited in the Vatican. The first-named head is thus spoken of by Mr. Taylor:—

"We cannot too strongly express our admiration of this very spirited and masterly piece of sculpture: its general character evidently shows that it represents a head of one of the Homeric heroes. Many attempts have been made to ascertain the particular person whom it was intended to represent, but hitherto without success. It is considerably inclined to the right, and is looking upward with a countenance expressive of the deepest anguish both of mind and body. The hair of the head, though not long, is in bold and distinct masses, and the beard is very short and close to the face.

"We may remark a great similarity between the character of this head and that of Menelaus in the French collection, supposed to have belonged to a group representing Menelaus supporting the dead body of Patroclus. We are not, however, inclined to think that the head now before us was intended to represent Menelaus, as the head of that hero is in the instance just mentioned, as well as in every other instance which we are acquainted with, covered with a helmet, and the beard is much more ample."

The nose in this statue, and a small portion of each lip, are modern, as are also part of the lobe on the left ear, and a tuft of hair on the top of the head. The bust on which the head is placed is not antique: the line of separation is

marked in the wood-cut. The height is one foot, nine inches and a half.

In the reign of Hadrian some of the superstitions of Egypt were introduced into Italy, and became so mixed up with the worship of the Romans, that the gods of the Nile were publicly honoured, and their statues admitted as objects of adoration. This enlargement of the catalogue of their deities caused a great demand throughout the empire, for statues and other representations connected with the Egyptian ceremonies. Accordingly we find that the villa of Tivoli was decorated with imitations of Egyptian figures and subjects, and that remains of this nature have been found in considerable number, both there and in other parts of Italy.

After the death of Hadrian sculpture rapidly declined, though during the time of the Antonines some attention was paid to the art, and busts of some merit were executed.

The best and most characteristic sculpture of Rome was that which adorned their public monuments, and which recorded the history of their emperors' triumphs; as in the Trajan column, where the exploits of the emperor are represented in one continued winding relief from the base to the summit, and are crowned by the statue of the emperor himself. In the difference of style and execution in the two columns of Trajan and Antoninus, may be distinctly traced the rapid decay of the art during the period which elapsed between their erection, while still later, in the arch of Septimus Severus the low condition of the art is fully manifested. The arches raised to Titus, Trajan, Severus, and Constantine are among the principal compositions of Roman sculpture. "They breathe," says Flaxman, "the spirit of the people they commemorate, which was conquest and universal dominion; they owe no inspiration to the muses, urge no claim to the epic, or dramatic; they are the mere paragraphs of military gazettes, vulgar in conception, ferocious in sentiment; on the columns and arches, the principal objects are mobs of Romans cased in armour, bearing down unarmed, scattered Germans, Dacians or Sarmatians, soldiers felling timber, driving piles, carrying rubbish, shouldering battering rams, killing without mercy, or dragging or binding captives."

The efforts of Constantine, on his ascending to the imperial dignity, were directed to restore that feeling for the arts which seemed almost to have departed from Rome. He established schools of architecture, and distributed rewards and privileges among the most distinguished students, endeavouring thus to excite an honourable emulation among the youths of the capital. By these means he succeeded in raising several considerable buildings, but in adorning them he was obliged to have recourse to the sculptors of a former age, and to seek afresh in the cities of Greece and Asia Minor for such remains of ancient art as had been left by former collectors. He also gave employment to artists of his own time, but their works, chiefly in metal, showed but too plainly that the spirit of ancient art was irrecoverably lost. To give the reader some idea of the profusion of plundered specimens of art which were eventually collected together at Rome, we may state that no less than eleven thousand exquisite works of Greek and Etruscan sculpture adorned the imperial city in the time of its splendour; so that Petronius, alluding to the taste for these ornaments and the profusion of them, observes, that it was easier to meet a god in Rome than a man.

The establishment of a seat of imperial government at Constantinople was a fatal blow to the greatness of Rome, and another cause for the continued decline of the arts in the latter city; yet it is from the reign of Constantine, when Christianity was established in the empire, that the dawning of modern art is recognised. It will be seen from the foregoing sketch that Roman sculpture is so inferior as to bear no comparison with that of Greece. The best works were produced by Greek artists, and the attempts of the Romans are for the most part characterized by poverty of invention, meanness of design, and unskilful execution. The art seems seldom to have met with efficient patronage, except where busts or portrait statues were required to please the vanity of individuals; accordingly we find the excellence of these latter works conspicuous above that of the other departments of art; indeed, the collection of busts of successive emperors reaching through a period of three centuries, constitutes an invaluable series, as it regards the history of art.

In the illustrations which accompany our notice of Roman sculpture our readers will observe that though each of the specimens we have represented was found near Rome, there is reason to believe that in each case the work was either in part or wholly the work of Greek artists. The statue of the Goddess of Fortune was found by Mr. Gavin Hamilton near the *Via Latina*, a short distance from Rome. The description runs thus: "The statue of the Goddess of Fortune with a modius on her head; her right hand holds a rudder, the lower part of which rests upon a globe, and her left hand supports a cornucopia filled with corn and fruits of different kinds. The modius and the cornucopia allude to the abundance supposed to be conferred by this goddess upon her votaries. From a passage in Horace, in which Fortune is styled the mistress of the sea, it has been conjectured that the rudder is a symbol of her particular influence over that element. But it is more probable that the rudder is a metaphorical symbol of her general dominion over the affairs of the world, and this latter supposition seems to be very fully confirmed by the circumstance of the rudder being placed upon the globe.

"Fortune was worshipped in very early times by the Greeks; but her image does not appear on any of the more ancient Greek medals, and indeed of the numerous figures of her now extant both in marble and bronze, not one appears to be of high antiquity. It was not till the time of the Roman emperors that the worship of this goddess was universally established. After this period one of the most common figures on the Greek and Roman coins was that of Fortune: and as a proof of the great ascendency which she was believed by the Romans to hold over the interests of mankind, no less than twenty-five temples were erected to her at Rome."

Of this statue, the neck and nearly the whole of the modius are modern, and the head, though ancient, has belonged to another figure. The right hand and the whole of the rudder, except a small portion attached to the globe, are also modern, as is the left hand and the lower part of the cornucopia. The height, including the pedestal, is three feet, one inch.

The terminal head of the bearded Bacchus, of which we give a representation at p. 128, was found near the *Porta Latina*, at Rome. It is crowned with vine-leaves, which descend on each side of the face, and with a broad ample diadem, hanging loosely over the forehead in the form of a festoon. Most of the ancient marble termini have a square cavity on each side of them, rather below the shoulders, but in the present example, these cavities are filled up by two square projections on which the ends of the diadem rest. These projections show the ancient mode of joining a number of these termini together by rails or bars, in allusion to the use to which termini were originally applied, namely as fences, and boundaries.

In concluding these remarks on Roman sculpture we may naturally be led to inquire, what is the reason that a people so distinguished as this, for manly and persevering talent, should, of all the nations that have held supremacy in the earth, be the least remarkable for any bold peculiarities, or successful darings of their own genius? especially in an art where the practice is laborious, the principles grave and simple, and therefore, apparently well adapted to suit the nature of Roman talent? We have already anticipated the most evident answer to this inquiry, in alluding to the warlike and impetuous spirit of the conquerors of the world, which led them rather to action and business than to elegant acquirements. But we must also remember that the art of sculpture was the peculiar eminence of the people they had conquered, and having no respect for its professors, and considering them as little better than slaves, they were the less likely to admire and successfully to practise the art itself. Then the amazing profusion of the beautiful works of Greece, presented them with such abundant means of decorating their buildings and palaces, that there was the less inducement to employ native artists in the execution of works which could not fail of being greatly inferior to these which came ready prepared to their hand.

Section V. Modern Sculpture in Italy.

Flaxman is of opinion that we may justly date the beginning of modern art, from that period when painting and sculpture ceased to be employed, as heretofore, on the pagan gods, but were engaged to illustrate subjects connected with Christian worship. Thus from the time of Constantine the arts slowly and gradually revived, and an original character made itself apparent, even in the rude and almost frightful attempts of the early Christians. While inspired, perhaps, with a taste for sculpture by means of the scattered remains of Grecian art, they

drew, at the same time from their own resources, and were by no means servile copyists of the artists of a former age. In those early days many of the artists united the three professions of painting, sculpture, and architecture, and sculpture can scarcely be said to have assumed a distinct and appropriate character until the time of Nicolo Pisano, who commenced his profession early in 1200, and exhibited a surprising degree of skill and talent in his art. His works, with those of his son Giovanni and his scholars, still adorn many of the cities of Italy. In the cathedrals of Pisa, Pistoja, Siena, and Orvieto, are magnificent marble pulpits enriched with bassi relievi and statues. These are the works of the Pisani, and give a high idea of their taste and feeling. The façade of the cathedral of Orvieto is decorated with relievi in white marble by the same artists, illustrating some of the principal facts recorded in the Sacred Writings. These performances have attracted much admiration on account of the simplicity and grace manifested in the arrangement of the several groups, and in the form of the individual figures. Nicolo Pisano lived to an advanced age, and though several excellent works were performed by his scholars, it was not till the succeeding century that a worthy successor appeared. This was his grandson, Andrea Pisano, who in the year 1330 executed a work of great beauty at Florence, illustrating the life of St. John. It is in bronze, and forms one of the gates of the Baptistery in that city. His marble statues were considered by Flaxman to be inferior to those of Nicolo and Giovanni, his predecessors.

The first academy of design was established at Florence, in 1350, and at the close of the same century sculpture was once more firmly established throughout Italy, and itinerant sculptors, not unskilful in their art, wandered from thence over Germany, France, and even England, where their works have been traced in the sculptured ornaments of Gothic edifices. Thus did the mild genius of Christianity prove favourable and mainly instrumental in the revival of the arts. "Upon the age now passing in review," says Memes, "when Freedom again rises, we behold genius also revive, as if the sweeter sensibilities and the manlier virtues had altogether slumbered through the long long night of ignorance and despotism. It is thus that spring, breathing on bank and wild wood, unchains the bud and the blossom from the tenderest floweret to the hardy oak."

The labours of the fifteenth century in all the elegant arts will ever hold a distinguished place in history. In the first year of that century no less than six great masters were competitors for the same public work, the bronze doors of the baptistery of Florence, and each of these competitors afterwards became the head of a flourishing school. Their names are, Brunelleschi, Ghiberti, Jacomo della Quercia, Nicolo Lamberti, Francisco di Valdambrino, and Simon dei Colle. Ghiberti, then a youth of twenty-three, was the successful candidate, and the work thus assigned to him occupied forty years of his life, and is one of the proudest triumphs of modern art. The southern door of this edifice had previously displayed the talents of Andrea Pisano: the northern and eastern doors were to carry to future generations the fame of Lorenzo Ghiberti. The northern door represents the life of our Saviour,—the eastern door the most striking events of the Old Testament history. Michel Angelo is said to have admired them so highly that he declared them fit to be "the gates of Paradise."

"Among the illustrious names for which this period was remarkable, that of Donatello stands deservedly conspicuous. The works of this artist are exceedingly numerous, and are scattered all over Italy: they are executed in every variety of material, and in various degrees of magnitude. His marble statue of St. George was greatly admired by Michel Angelo, as was also the statue of St. Mark, decorating the same building, the church of Or San Michele at Florence. Respecting the latter statue it is said that, after surveying it for some time, Michel Angelo exclaimed, 'Mark, why dost thou not speak to me?'" The scholars of Donatello have been divided into two classes,—those who were fellow-labourers with him, and whose celebrity is chiefly owing to the assistance they lent him in his great works, and those more legitimate disciples who, without following servilely in the track of their master, derived their knowledge in the first place from his precepts, and subsequently added to, and even improved on the principles with which they set out.

Respecting this age it has been justly said that modern sculpture attained its manhood. A character of truth and simplicity, faithful imitation of nature, and just expression, visibly begin from the time of Nicolo Pisano, whose own style was remarkable for sweetness and absence of pretension. A degree of meagreness and restraint long pervaded the early school, yet even in the works of the fourteenth century, the art being chiefly dedicated to devotional purposes, and to the memory of departed worth, "an air of dignified sincerity, a touching portraiture of the gentler affections, diffuse over the mind of the spectator a melancholy yet pleasing serenity, to be felt rather than described." In the succeeding century the style becomes more elevated yet not less true: the execution at the same time is bold and felicitous, and the imitation is faithful to nature. One department of sculpture attained an eminence in the fifteenth century which has not been surpassed. This is the high and the low relief practised by Donatello and Ghiberti, where the sacred subjects represented appear to have imparted to the genius of the sculptors a portion of their own sacred dignity and holy feeling.

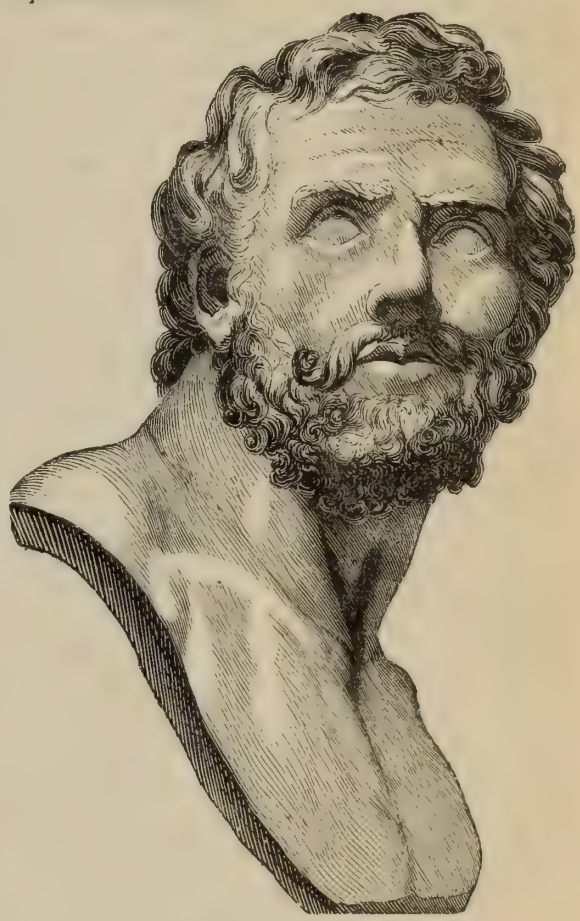
It would be foreign to our purpose to describe the works, or even to record the names of the meritorious artists who filled Italy during the fifteenth century: suffice it to say that so great was the advancement in sculpture, so numerous the schools of art, that the age in its bright prospects has been compared to that of Pericles: "it wanted but a Phidias to crown its prosperity, and in Michel Angelo the genius of Greece seemed to be supplied." This extraordinary man united the professions of sculptor, painter, and architect, and was illustrious in each. The opinions respecting him may differ in many respects, but all must agree that his works have a strongly marked character of their own, and possess wondrous power and dignity. His vast and almost superhuman conceptions were executed in a most astonishing manner, and with a perfect knowledge of the true principles of his art. Michel Angelo Buonarotti was born in 1474, and living to the advanced age of ninety, was the means of influencing the efforts of art during the greater part of the sixteenth century. "Anatomy," says Flaxman, "motion and perspective of figure, the complication, harmony, and grandeur of his grouping, with the advantage and facility of execution in painting and sculpture, besides his mathematical and mechanical attainments, in architecture and building, which, together with the many and prodigious works he accomplished, demonstrate how greatly he contributed towards the restoration of art." Some of the most renowned works in sculpture by Michel Angelo are the colossal statue of Moses, a grand, but not altogether pleasing performance; the statues of Lorenzo and Giuliano di Medici; the David; the Virgin and dead Saviour, &c. Several of his works are left in an unfinished state. Impatient of slow progressive toil, yet full of activity and industry, his power of performance could not keep pace with his rapidity of conceiving and designing magnificent undertakings. In the course of his history, which we shall hereafter lay before our readers, in a separate form, it will be also apparent that he had many difficulties to contend with in the execution of his works, arising from the jealousies or ignorance of those by whom he was surrounded. The following opinion on the most celebrated work of this artist may be taken, with some little modification, as giving a good idea of the general character of his performances. "The Moses, on the tomb of Julius the Second, amid the creations of genius rises a solitary and matchless monument. Without model among the productions of antiquity, it has remained inimitable and unimitated in modern times. Neither in Nature do we find its prototype: it is the extraordinary conception of an extraordinary mind. Thus isolated by its own peculiar sublimity of character, this statue exhibits a striking resemblance of the imagination whence it derived existence. We behold a being who awes, who subdues, yet who fails to interest, for with such humanity entertains no communion of feeling. Here the sublime is too exclusively sought in the vehement and the marvellous; every effort is forced; every trait exaggerated, and the whole shows a daring originality, verging on the extravagant and the false." Notwithstanding the faults which the manner of Michel Angelo threw more or less into all his productions, the majesty and grandeur of his statues compensated in a great measure for minor defects. In the numerous imitators of this great man we find that for the most part the *manner* of the artist, including the faults, is carefully retained, while the stamp of originality and genius is wanting to atone for the latter.

Michel Angelo died in 1564, and was buried in the church of Santa Croce, in Florence, and a monument is raised to him, in which is a basso relievo, by himself, of a Madonna and Child. This monument is the work of his pupils, and

consists of a bust of Michel Angelo over a sarcophagus, with statues, supposed to represent Painting, Sculpture, and Architecture.

Jacopo Tatti, better known as Sansovino, had studied with Michel Angelo, and after his death became the founder of a numerous and respectable school. He presided over the Venetian works of sculpture and architecture, and enjoyed a considerable reputation. Sansovino was more deserving of praise as an architect than as a sculptor. His statues in the Palace of the Doge at Venice are elaborately executed, but very deficient in the true principles of art. At the time at which we have now arrived a profusion of ornament began to be employed in works of sculpture, and artists bestowed that time and attention on minutiæ of mouldings, scrolls, flowers, and other merely ornamental works, which should have been given to the higher objects connected with their profession. There are fine specimens of this elaborate style at Venice, but the richness of the effect makes but poor amends for the loss of simplicity and purity.

One of the most distinguished contemporaries of Michel Angelo and of Sansovino, was Baccio Bandinelli, born in 1487. He was extremely unpopular with his brother artists, and is said to have contended with Michel Angelo with less generous weapons than those of talent. To him is attributed the unworthy act of secretly destroying that great artist's celebrated cartoon of the Battle of Pisa, which was considered at the time the most excellent design that had ever been executed, so that all the most celebrated painters of the day attended to make studies from it. We find the works of Bandinelli unsparingly condemned by contemporary writers; but from the specimens of his performances which still remain he seems entitled to a high place among the sculptors of his day. The bassi relievi round the screen of the high altar in the Duomo of Florence are deserving of much praise for their breadth and fine treatment, but they are liable to the charge which attaches to all the other performances of this artist, *i.e.*, a too great appearance of the picturesque, leading to an affected style of attitude and arrangement. In the church of the Annunziata at Florence, is a marble group the size of life, where he introduced his own portrait in the form of Nicodemus supporting Christ. This was intended for his own monument. To this artist was intrusted the restoration of the right arm of the celebrated group of the Laocoon. The next artist to whom we shall refer is Benvenuto Cellini, born at Florence in 1500. He was distinguished as a sculptor, founder, and chaser. His larger works are preserved at Florence, and are all executed in bronze; his smaller works abound in foreign collections, and consist of tasteful ornaments, medals, bucklers, daggerhilts, &c. Guglielmo della Porta was one of the most skilful of the Lombard sculptors. His most remarkable work is the monument of Paul III. in St. Peter's at Rome. The recumbent figures in this monument representing Prudence and Justice, the one a female of advanced years, the other a young and beautiful woman, are exceedingly fine. We have already noticed the taste for fine and curious execution which had become prevalent among artists, to the exclusion of graceful simplicity and repose. This destructive taste was fully illustrated in the works of Giovanni di Bologna, otherwise an artist of talent, and endued with bold and elegant conceptions. Baldinucci, who wrote the life of this artist, records an interview between Giovanno and Michel Angelo, when the former was quite in the commencement of his career, and was anxious for the opinion of the great master of a figure which he had executed with great care and minuteness of finish. After examining the work, "Young man," said Michel Angelo, "learn to compose your figure before you try to finish it." In 1598, Bernini was born at Naples, and though greatly inferior to the mighty master of the last century, he proved himself to be possessed of endowments by which he might have reached a high standard of excellence. He had genius, fertility of fancy, wonderful powers of execution, with unceasing industry and ambition to excel. But he had neither a well-regulated judgment, nor a manly taste. To him the simplicity of the ancients seemed meagreness and poverty of style, while the grandeur of Michel Angelo was deemed more forcible but too severe. He therefore tried to erect a third style possessing greater strength and energy than the former, and more suavity and grace than the latter. In this futile attempt he was, notwithstanding his great talents, the undoubted instrument of hastening the decline of sculpture, by introducing a false and flattering taste, and confirming the tendency to an overloaded and elaborate style. Bernini was master of the works to several popes in succession, and means were thus afforded him of diffusing his peculiar views. Some of his most remarkable works may be briefly noticed. The monuments of Urban VIII. and Alexander VII. are splendid examples of his talents, though exhibiting fully the influence of the false taste we have alluded to. That of Alexander, in particular, is beautifully executed, but strangely composed. The figure of the pope appears seated in the centre of a deep niche, and all around him is distributed, as a ground-work to the whole, a mass of cloud and curtain, in the four corners of which are plunged allegorical groups of figures. Those in the background are inconspicuous, but the front corners are occupied by Truth and Charity: the latter with her infants is a remarkable instance of the power of the artist to give an unyielding material the semblance of elasticity, the softness and roundness of human flesh. The Apollo and Daphne by Bernini in the Villa Borghese is a very meritorious performance, displaying great skill in execution. A statue of David preparing to throw the stone is full of energy and fine expression; it was an early performance, and forms a portrait of the artist himself. Four colossal statues representing Four Doctors of the Church supporting the chair of St. Peter, in the church of that apostle, are finely imagined, but injured by want of simple expression and attitude.



ANTIQUE HEAD: IN THE BRITISH MUSEUM.

Contemporary with Bernini were Algardi and Flammingo. They were to a certain degree copyists of Bernini, yet both have some claim to originality. The former is celebrated for having produced the largest, though not the best relievo of modern art. It represents the discomfiture of Attila by the miraculous appearance of St. Peter and St. Paul. The work is executed in marble, in five pieces, and measures about thirty feet in height, and eighteen in width. Flammingo at first contented himself with imitations of the style of Bernini; but subsequently copied from nature, and became eminent for his skill in representing the round and healthful forms of very young children. Of some of these representations Rubens is reported to have said, "Nature rather than art appears to have sculptured; the marble seems softened into life."

After Bernini, who died in 1680, Camilla Rusconi, a Milanese, was esteemed the master sculptor of Italy. He

followed the same principles as his predecessor, but his talents were much inferior, and the deterioration of taste became yet more rapid in his hands, while external circumstances also contributed to the fall of sculpture.

It would be superfluous to name the artists, who being either contemporaries with or successors to Rusconi continued with more or less of ability to carry out the same views, in this declining period of the art. Through nearly a century, from the death of Bernini to the appearance of Canova, there is not occasion to pause over the works of a single artist, except to mourn the bad taste by which his talent was warped and misapplied.

"Art has never been reformed," says Memes, "after a lapse from high eminence, by mere imitations of example however excellent, nor by only following rules for the correction of error. Some mind of uncommon firmness and good sense is required, who beginning with nature brings to the work of reformation original powers and severe judgment; fancy and feeling, with correctness and cultivated taste: one, in short, of those rare minds whose merits, great in themselves, become incomparably greater viewed with the times in which they commmenced their career; whose exertions, wonderful in their own accomplishments, are yet more admirable from the progress which others have thereby been able to effect. Such a genius was that possessed by Canova, a name venerable alike for virtue and for talents." For a description of the most celebrated works of this great artist we beg to refer our readers to three articles, entitled *Canova and his Works*, in Vol. XVIII. pp. 18, 50, and 66 of this Magazine. Whether we consider the multiplicity of his labours, the elegance and purity of his taste, the fertility of his genius, or the correctness of his judgment, we must acknowledge Canova to have been a most extraordinary artist, eminently calculated to be the restorer of Italian sculpture from the state of degradation into which it had fallen, and to establish improvement upon genuine and universal principles of art.

The genius of Canova gave a new and general impulse to sculpture. Thorwaldsen, born at Copenhagen, in 1772, is classed among Italian artists, and considered the head of the modern school. The genius of this sculptor is forcible, but its energy is rather owing to peculiar views, than arising from real excellence. His principal works are the Triumph of Alexander, two exquisite pieces of Night and Aurora, and his Mercury—an example of the beauties and defects of the artist's style. His relievos are remarkably fine. That of Alexander's Triumph has been called, notwithstanding some minor defects, one of the grandest compositions in the world. The character of Thorwaldsen as a sculptor has been thus summed up: "Thorwaldsen possesses singular, but in some respects, erratic genius. His ideas of composition are irregular; his powers of fancy surpass those of execution: his conceptions seem to lose a portion of their value and freshness in the act of realizement. As an individual artist he will command deservedly a high rank among the names that shall go down to posterity. As a sculptor, who will influence or has extended the principles of art, his pretensions are not great; or should this influence and these claims not be thus limited, the standard of genuine and universal excellence must be depreciated in a like degree." There are other names which might be worthily associatad with that of Thorwaldsen, but as it is not requisite to dwell on the history of living artists in a brief sketch like this, we close our history of Italian art, and proceed to that of other countries.

Section VI. · British Sculpture.

The knowledge of sculpture introduced into England by the Romans at the time of their subjugation of this country appears to have been very rude and imperfect, and the specimens which can be referred to that early date, are so badly executed, as to lead to the supposition that they were the work of the common soldiers, rather than of the artists of Rome. During their sway in Britain, however, some taste for works of art was excited among the conquered people. Flaxman, quoting the language of Speed, says that King Cadwallo being buried in St. Martin's Church, near Ludgate, his image, great and terrible, triumphantly riding on horseback, artificially cast in brass, was placed on the western gate of the city, &c. The death of Cadwallo is placed at A.D. 677. After the final evacuation of the country by the Romans, the attempt to imitate the human form was little practised, and throughout the dominion of their successors, the Saxons, we find the art in a feeble state, and rudely displayed. From the time of the Norman invasion, we trace the introduction of a better style of art, still farther improved and modified in the time of the Crusades, when foreign travel had enlightened the minds of multitudes in matters of taste, and spread abroad a knowledge and appreciation of Grecian statuary, which soon began to show itself in the improvement of English sculpture. Before the end of the eleventh century, there is no evidence of sepulchral statuary having been executed in England. This practice we may therefore conclude to have been introduced at the time of the Norman invasion. In the cloisters of Westminster Abbey are sculptured effigies carved in very low relief on coffin-shaped slabs, supposed to represent two abbots, Vitalis who died in 1087, and Crispinus who died in 1117. After the return of the Crusaders good sense and simple grace began to be apparent in works of art, and to redeem the imperfections which were still to be found in the workmanship. The number of ancient monuments executed during the early period of our history, and still adorning our old cathedrals and abbeys, is considerable; yet very little is known of their authors. It is probable that very many of our most beautiful architectural and sculptural works were performed by foreigners, members of those fraternities of itinerant artists of whom we have spoken in our Supplements on Architecture, and whose societies were composed of architects, sculptors, workers in mosaic, builders, designers; each strictly attending to his particular department, but under the common guidance of the general overseer. That this was really the case seems nearly proved by the fact that the very improvements introduced by Giovanni da Pisa, son of Nicolo Pisano, are decidedly apparent in English works of that period. It is true that English names are recorded as the masters of the works in our most celebrated erections, but there is much reason to believe that many of these persons, whose names have been handed down to posterity in connection with particular undertakings, were the ecclesiastics, who laid their plans and communicated their wishes to the foreign artists, and by whose direction the buildings were commenced.

This state of things, far from being prejudicial to the development of native talent, was the means of fostering and assisting it, and we have every reason to conclude that in the very works we have been speaking of, numerous assistants must have been needed, and selected from among the English, to carry out the grand designs of those who had the principal charge of the work. It is little doubted but that some fine monuments of our Henries and Edwards during the fifteenth century, are the works of home-bred talent. It was the opinion of Flaxman that the greater part of the sculpture of Wells Cathedral, built by Bishop Joceline during the early part of the thirteenth century, was the work of native artists. Some of the statues exhibit much grace and simplicity. But the sculpture of the reign of Edward the First, and the statues of that monarch and his queen in Westminster Abbey, bear proof of their being the work of Italian artists. Under Edward the Third the art appears to have been much cultivated by Englishmen, and various interesting works exhibit their skill. The name of William Austin is honourably recorded as the author of Beauchamp, Earl of Warwick's monument in the Warwick chapel. It is well known that two Italian sculptors were much employed in England during the sixteenth century, *i.e.*, Cavallini and the celebrated Torregiano, who executed the monument in Henry the Seventh's Chapel, at the price of one thousand pounds. John of Padua, a pupil of Michel Angelo, was master of works to Henry the Eighth. The monuments of this period to which English names are attached, do not exhibit even a tolerable degree of skill. Indeed, from the time of Henry the Eighth to Charles the First, the art of sculpture fell into much neglect; during the eventful period, and amidst the struggles, which preceded the establishment of the Reformed religion, it frequently happened that party feeling and mistaken zeal led to the mutilation or total destruction of the choicest specimens of art. Under these circumstances, there was little encouragement to the sculptor to continue his vocation. Charles the First was much inclined to encourage the arts. It was by his order that the cartoons of Raphael, and other splendid works, were made the property of this country. English sculptors flourished in that reign, and though the style and composition of their works are of a very low order, there is occasionally a boldness of conception which renders them worthy of notice.

All the sculptors of talent who flourished in England during the last century were foreigners, though some of them by long residence among us earned a British fame.

The principal works were executed by Gibbon, Cibber, Steevens, De Vere, Bertocini, Sheemacker, Roubiliac. This variety of sculptors, from different countries, brought a variety of taste and style, but very little of sound principle in art.

The school of British sculpture, properly so called, may be considered as commencing with Banks, who was born in 1738, and died in 1805. "He was the first of our native sculptors," says Cunningham, "whose aims were uniformly lofty and heroic, and who desired to bring poetry to the aid of his compositions." His finest work was his Mourning Achilles, and the anecdote which accompanies the notice of it by the memorialist above named, is too characteristic to be withheld. When the statue was completed, praise was poured upon the artist from all quarters; some loved it because it was classic, others because it was natural, and more because the sentiment of sorrow was largely diffused from the face over the figure. He was justly proud of this noble work, and proceeded to remove it to the exhibition rooms in Somerset House. The packing and removing of sculpture is at all times attended with danger, and so it proved in this instance, for the wagon was overturned in the street, and the Mourning Achilles shivered into five hundred pieces. Banks, who accompanied the carriage, witnessed the destruction of his figure—the work of a whole twelvemonth was lost in one moment, and as he depended upon it for the establishment of his name, all hopes of future celebrity for the moment vanished. He returned home, and such was his command of temper,—his philosophic, or, more properly, devout resignation under this calamity,—that neither his wife nor daughter observed that anything unfortunate had happened. He returned to the exhibition room, collected the scattered fragments of his work, and assisted by his younger brother, pieced it patiently and skilfully together, and restored the Mourning Achilles to something like its original beauty. He then communicated what had happened to his wife.

Bacon, born in 1740, was in every respect an English artist, and almost self-taught. His statue of Samuel Johnson, in St. Paul's cathedral, is greatly admired for its fine and truthful expression. In the same building is another example of his talent, in the statue of the benevolent and philanthropic Howard. Contemporary with these two artists was Nollekens, "who," says Memes, "knew his *art*, but wanted *science*, dignity, and fancy."

We now come to the most eminent sculptor this country has yet produced,—the celebrated John Flaxman, born in 1755. This artist and his works have been recently noticed at some length in the pages of the *Saturday Magazine*: we shall therefore content ourselves with adding the opinions of Sir Thomas Lawrence and of Count Cicognara respecting his merits. The former speaks thus: "The elements of his style were founded in Grecian art, on its noble principles—on its deeper intellectual power, and not on the mere surface of its skill. Though master of its purest lines, he was still more the sculptor of sentiment than of form; and whilst the philosopher, the statesman, and the hero were treated by him with appropriate dignity, not even in Raphael have the gentler feelings and sorrows of human nature been treated with more touching pathos than in the various degrees and models of this inestimable man. Like the greatest of modern painters, he delighted to trace from the actions of familiar life the lines of sentiment and passion, and from the populous haunts and momentary peacefulness of poverty and want, to form his inestimable groups of childhood and maternal tenderness, with those noble compositions from Holy Writ, as beneficent in their motive as they were novel in their design." Count Cicognara thus testifies to the opinion the Italians entertained of our renowned countryman: "To Flaxman our obligations are very great, since, as far as our acquaintance with his works extends, they serve nobly to elevate from a certain monotonous lethargy, and to create afresh that taste for the severe and golden style of antiquity which he applied to his own inventions."

At the present day our country may boast of sculptors of superior talents, and from the beautiful specimens of art which have appeared during the last few years, we may confidently anticipate a high degree of excellence to be attained in this art. A just taste is every day becoming more widely diffused, and liberality of patronage is giving a powerful stimulus to the exertions of our sculptors. An important step towards this desirable state of things was taken at the early part of this century by the purchase of some of the most celebrated works of ancient art, and their public exhibition in our National Museum. Since the works of the celebrated Phidias have been thus brought before us, every department of taste has been improved, sculpture in particular. And thus may it long continue to be with this most pleasing art. It has been well remarked that, "Sculpture seems especially calculated to flourish amongst us. The grave and manly character of the art agrees with the tone of national genius, harmonizes with our free institutions, and may find in our history sources of the brightest inspiration."

A few of the more striking proofs of British talent, as exhibited in our public monuments, may here receive a brief notice. The colossal equestrian statue in brass of George III. placed at the extremity of that noble avenue called the Long Walk in Windsor Park, presents an admirable likeness of the sovereign. It is twenty-six feet in height, and with its pedestal (which is a mass of stones intended to represent a rock), reaches an elevation of fifty feet. The eminent sculptor (Mr. Westmacott) to whom the public is indebted for this fine performance, has not escaped censure, as it respects the drapery of the figure; for those who so well remember their beloved Sovereign, attired in a plain English dress, are naturally surprised and offended at the Roman costume in which he is represented. It has been justly said that a false idea will be conveyed to future generations respecting the style of dress in England during the nineteenth century, for owing to the almost imperishable nature of the material, this statue will probably exist for thousands of years. The apparent height of this statue is greatly diminished by the lofty proportions of the trees by which it is immediately surrounded.

Foremost in the list of metropolitan monuments must be placed the statue of the Duke of York erected at the principal entrance to St. James's Park. The figure is thirteen feet nine inches in height, and stands on a beautiful Doric column, one hundred and twenty-four feet high. The duke is represented in modern costume, with a cuirass and military boots. His right hand rests upon a sword, eight feet in height, and across his left shoulder is thrown an ample mantle emblazoned with the order of the Garter.

The colossal statue in bronze, erected in Hanover Square to the memory of William Pitt, is, in many respects the finest in London. Mr. Chantry has represented the orator in the act of addressing an audience.

Another celebrated public testimony, of which the last named admirable sculptor was the author, is the marble statue of Watt, in Westminster Abbey. Nothing could more faithfully express the character of the philosopher than this exquisite composition, breathing in its simplicity and repose, the calm and reflecting mind of the extraordinary man it is designed to commemorate.

The commemoration of individual excellence and public worth seems the principal sphere at present for the statuary in England. "The features of the wise man," says Milman, "and the figure of the warrior, cannot be too distinct and determinate; and though more imaginary subjects fail him, the English sculptor cannot want matter for his skill, till the line of English heroes and English sages is extinct. Modern sculptors have often attempted to substitute allegory for mythology; but, besides the difficulty of distinguishing these beings by their attributes, there is this strong objection:—we cannot, by any effort, believe their actual existence, or forget that they cannot exist; that they are but philosophical symbols. The Grecian divinities required an abstract exercise of the imagination to credit their existence in their beauty and majesty; but there was no obtrusive impossibility, nothing that positively contradicted their reality of being. But though Minerva, and Mars, and Apollo, are obsolete to our feelings, and unenlivening to our imagination, yet for representations of embodied wisdom, and valour, and poetry, our memory would gladly cleave to particular images. The statue of Newton, with its deep concentration of thought and undisturbed retirement within itself, may stand a strong and vivid emblem of philosophy. Why should the dying figure of Wolfe or Nelson be confined to the canvas? The satisfied serenity of the expiring conqueror should be wrought in durable marble. And in Milton 'sleeping under the Italian shade,' in his youthful beauty, the calm and holy inspiration of poetry might be moulded and wrought in all its fulness and perfection."

Section VII.

French, German, and Spanish Sculpture.

We cannot close our remarks on sculpture without briefly adverting to that of the nations above mentioned,

although we find little to attract attention in the works of their native artists. As in the case of the early history of our own country, so many of the best works were executed by Italian sculptors, that the art can scarcely be said to have had an existence apart from their labours. Nevertheless French sculptors of some eminence are spoken of as early as the middle of the sixteenth century. Jean Gougon completed the celebrated Fountain of the Innocents in 1550. His contemporary, Jean Cousin, also possessed talent, but his works, though not without grace, are deficient in strength and correctness. German Pilon is spoken of as a master whose productions are full of energy, but wanting in simple and natural expression. Jacques d'Angouleme was contemporary with Michel Angelo, and the national vanity has shown itself in the statement that he once defeated that great master in a trial of skill. Giovanni di Bologna we have already named. He filled the whole of France with the principles of his former master, down to the time of Louis the Fourteenth. At this time excessive refinement of decoration prevailed, and the tendency to minuteness of execution, and flutter in composition and design, which had characterized French sculpture almost from the sixteenth century, was at its height. Girardon and Puget were the celebrated artists of this period; the former possessed great merit, though not sufficient to justify the language of Voltaire, "*il a égalé tout ce que l'antiquité a de plus beau.*" Puget, the favourite of his country, is energetic in composition, bold and full of movement in his method of handling, but is deficient in nobleness, grace, and science. Sarasin is spoken highly of as the author of the Caryatides at the Louvre. The succeeding artists followed the steps of Girardon and Puget, until the excesses of the unhappy period of the Revolution put an end, for the time, to the arts of peace, and proved destructive to the treasures of antiquity. One of the last statues executed previous to this dreadful outbreaking was that of Voltaire by Pigal, which called forth the following severely just epigram:

Pigal au naturel represente Voltaire—
Le squelette à la fois offre l'homme et l'auteur,
L'œil qui le voit sans parure etrangère
Est effrayé de sa maigreur!

Germany appears to have made little progress in sculpture prior to the seventeenth century. The bronze statues surrounding the tomb of the Emperor Maximilian at Innspruck are indeed attributed to Laffler or Loffler, who died in 1565; but they are more frequently assigned to two brothers of the name of Godi, probably Italians. Ranchmuller preceded Shluter of Hamburg, who visited Rome, and attached himself to the manner of Michel Angelo. Some finely executed pieces of sculpture in Vienna were the work of Messerschmidt. In later times Ohnmacht, Sonneschein, Nahl, and the two Shadofs have highly distinguished themselves. The Spinning Girl of the younger Shadof is esteemed one of the most exquisite imitations of nature which modern art can show. Still Germany is more celebrated for writers on the philosophy of sculpture than for artists who have attained eminence in the practice of the art.

Spanish historians give a long list of native sculptors from the beginning of the sixteenth century. The greater part of them appear to have been employed in ornamenting the churches of Spain, and are little known beyond their own country. Berruguete, a pupil of Michel Angelo, appears to have founded the first regular school of sculpture. He adorned Madrid, Saragossa, and other towns, with works that exhibit much of the grandeur and expression of ancient art. Paul de Cespides was celebrated as a sculptor of great merit, and in the eighteenth century Philip de Castro contributed greatly to raise the art and to diffuse true principles and correct taste, in Spain.

In conclusion we may quote the remarks of Mr. Grattan on the advantages expected by the ancients from the well-directed exercise of sculpture. "The history of Greece might be studied in the street, as well as in the closet. The very ornaments of their houses were pregnant with utility, and while they entertained the eye, informed the judgment, and transmitted shining examples to the latest posterity. So prevalent and uniform were the effects expected from these sculptured monitors among the Romans, that their satirists and orators instanced the frequent neglect of them as a mark of aggravated degeneracy. Their bold figures and glowing descriptions represented the venerable statues as animated with shame and anger at the corruption of their race, painted them as domestic and ever-present accusers. With a stern and indignant silence they conjured them, by those precious monuments, no longer to let their excesses tarnish their hereditary honours, or wound the peace of those illustrious shades by whose sufferings and virtue those honours were purchased and acquired. Such great advantages did the ancients both expect and derive from a well-directed exercise of sculpture; nor have we reason, even in these days, to suspect that its operation should vary, or its influence on the genius of a people be sensibly diminished.

"Britain has ever warmly and abundantly discharged the debt of gratitude to her deceased benefactors: but let her now go farther: she should begin to reap, in the certain encouragement of public virtue, the fruits of that laborious perfection to which her patient ingenuity has raised the arts."

TERMINAL HEAD OF THE BEARDED BACCHUS.
(In the British Museum.)

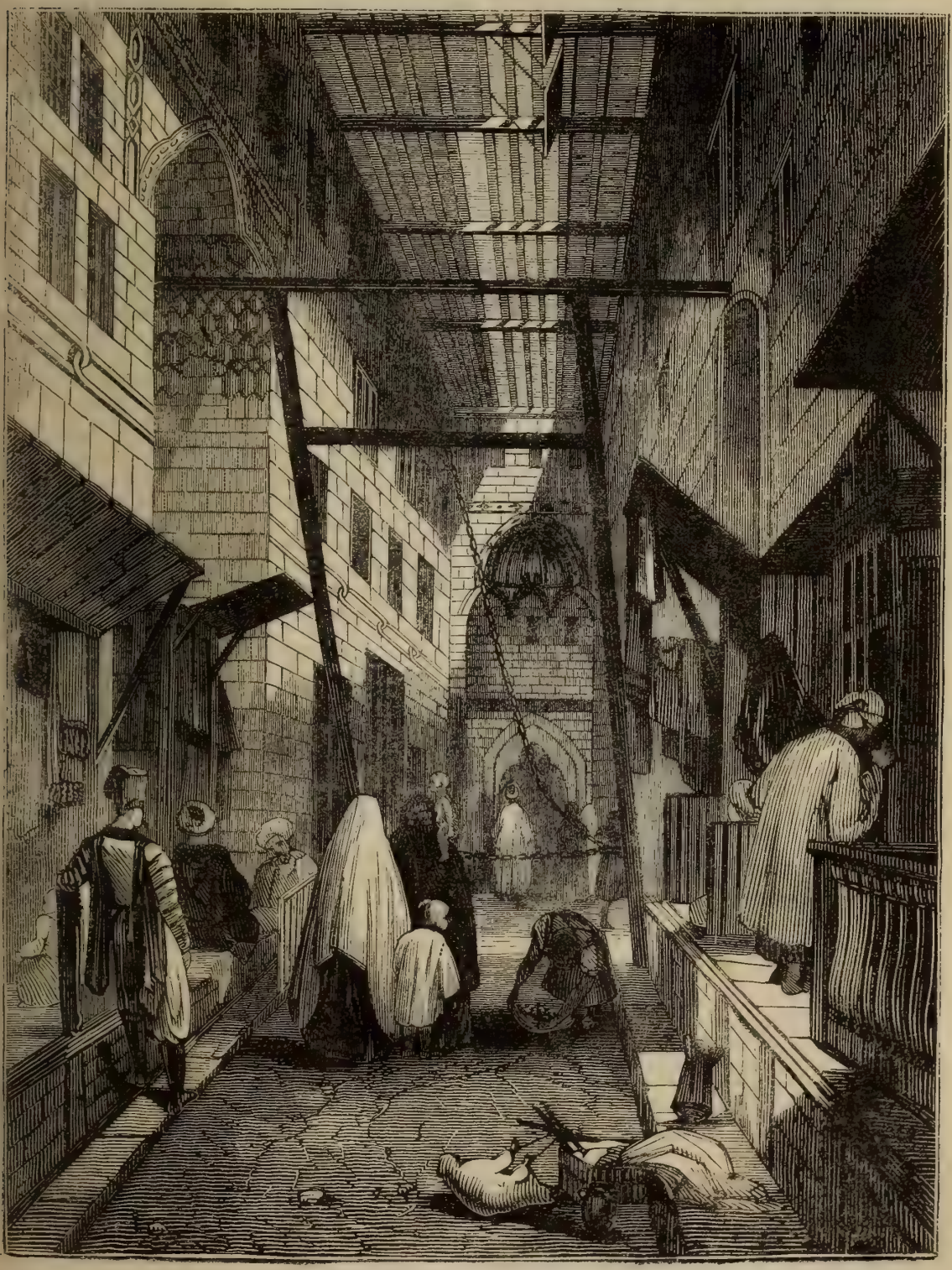
LONDON, Published by JOHN W. PARKER, West Strand, and sold by all Booksellers.

THE

Saturday Magazine.

No. 594. OCTOBER 2ND, 1841. { PRICE ONE PENNY.

SKETCHES OF CAIRO. IV.



KHAN-EL-KHALEELEE, CAIRO

SKETCHES OF CAIRO. No. IV.

The district commonly known as the Khan el-Khaleelee comprehends within it several large khans, or wekalehs; but it is properly confined to a much smaller space within the immediate neighbourhood of the khan represented in our frontispiece. It was founded about A. H. 690. (A. D. 1291,) by a person named Khaleel. This wekaleh is a favourite resort of the Turks, and natives of the higher orders. Its shops are principally occupied by the dealers in silks, shawls, and ready-made clothes; and on public market days, it is nearly impassable from the busy throng. Mr. Hay has not represented it on such an occasion, and on that account this view exhibits the buildings to greater advantage. It is lofty and covered in, so as to exclude the ardent rays of the sun and yet admit sufficient light.

Mr. Lane describes a wekaleh as a building surrounding a square or oblong court. Its ground floor consists of vaulted magazines, for merchandize, which face the court; and these magazines are sometimes used as shops. Above them are generally lodgings, which are entered from a gallery extending along each of the four sides of the court; or, in the place of these lodgings, there are other magazines, and in many wekalehs which have apartments intended as lodgings, these apartments are used as magazines. In general, a wekaleh has only one common entrance, the door of which is closed at night, and kept by a porter. There are about two hundred of these buildings in Cairo, and three-fourths of that number are within that part which constituted the original city.

It is common in Cairo for a portion of a street or a whole street to contain shops appropriated to one particular trade; and this is called the soock or market of that trade, or is named after a neighbouring mosque.

The shop is a square recess or cell, generally about six or seven feet high, and between three and four feet wide. Its floor is even with the raised seat of stone or brick, built against the front. The shop is furnished with folding shutters, commonly consisting of three leaves, one above another; the uppermost of these is turned up in front, the other two leaves, sometimes folded together, are turned down upon the raised seat, upon which is spread a mat or carpet, and sometimes a cushion or two is added. There the shopkeeper generally sits, unless obliged to retire a little way within his shop, to make room for two or more customers, who mount up on the seat, taking off their shoes before they draw up their feet upon the mat or carpet. To a regular customer, or one who makes any considerable purchase, the shop-keeper generally presents a pipe, and sends to the nearest coffee-shop for coffee, which is served in small china cups placed within cups of brass. Not more than two persons can sit conveniently upon the raised seat of the shop, unless it be more than usually spacious. On this seat the shopman usually says his prayers, in sight of the passengers in the street. When he leaves his shop for a short time he relies for the protection of his property upon the next shop-keepers, or hangs up a net. He seldom closes and locks the shutters, except at night when he returns to his house, or when he goes to the mosque on Friday.

Buying and selling (says Mr. Lane), are here very tiresome processes to persons unaccustomed to such modes of bargaining. When a shop-keeper is asked the price of any of his goods, he generally demands more than he expects to receive: the customer declares the price exorbitant, and offers about half, or two-thirds, of the sum first named: the price thus bidden is of course rejected; but the shop-keeper lowers his demand; and then the customer, in his turn, bids somewhat higher than before: thus they usually go on until they meet about half-way between the sum first demanded and that first offered; and so the bargain is concluded. When a person would make any but a trifling purchase, having found the article that exactly suits him, he generally makes up his mind for a long altercation: he mounts upon the mustubah (raised seat) of the shop: seats himself at his ease; fills and lights his pipe; and then the contest of words commences, and lasts often half an hour, or even more. Sometimes the shop-keeper or the customer interrupts the bargaining by introducing some irrelevant topic of conversation; as if the one had determined to abate his demand no further, or the other to bid no higher: then again the haggling is continued. The bargain being concluded, and the purchaser having taken his leave, his servant generally receives, from the tradesman, a small present of money, which if not given spontaneously, he scruples not to demand. Among the lower orders, a bargain of the most trifling nature is often made with a great deal of vehemence of voice and gesture: a person ignorant of their language would imagine that the parties engaged in it were quarrelling and highly enraged. The peasants will often say, when a person asks the price of any thing which they have for sale, "Receive it as a present*;" this answer having become a common form of speech, they know that advantage will not be taken of it: and when desired again to name the price, they will do so: but generally name a sum that is exorbitant."

In addition to the numerous shops for the supply of the necessaries and luxuries of life a variety of articles are hawked about the streets for sale. Some of the street cries are very curious. The seller of *tirmis* or lupins sometimes cries, "Aid! O Imbabee! Aid!" This is understood in two ways: as an invocation for aid to the Sheykh El-Imbabee, a celebrated Mooslim saint, buried at the village of Imbabeh, on the west bank of the Nile, opposite Cairo, in the neighbourhood of which village the best tirmis is grown; and secondly as implying that it is through the aid of the saint that the tirmis of Imbabeh is so excellent. Sometimes the hawker cries, "The tirmis of Imbabeh surpasses the almond!" Also, "O how sweet are the little children of the river!" This last cry alludes to the mode in which the tirmis is prepared for food. To deprive it of its natural bitterness it is soaked for two or three days in a vessel full of water; then boiled; and after this sewed up in a basket full of palm-leaves, and thrown into the Nile, where it is left to soak again two or three days; after which it is dried and eaten cold, with a little salt. The seller of sour limes cries, "God make them light [or easy of sale]! O limes!" The toasted pips of a kind of melon, and of the water melon, are often announced by the cry of "O consoler of the embarrassed! O pips!" A seller of a sweetmeat composed of treacle fried with other ingredients is, "For a nail! O sweetmeat!" Children and servants often exchange iron nails and other articles of iron for these sweetmeats, and hence the cry. The hawker of oranges cries, "Ilmey! O oranges! ilmey!" and similar cries are used by the venders of other fruits and vegetables; so that it is sometimes impossible to guess what article is really announced for sale; except that the least excellent of the fruits mentioned in the cry is often the only fruit the man has to sell; thus, when a man cries "Sycamore figs! O grapes!" he has figs alone for sale, and these are not so good as grapes. The seller of roses utters a singular cry; "The rose was a thorn: from the sweat of the Prophet it opened its flowers." This alludes to a miracle related of the Prophet. The fragrant flowers of the hhenna tree (or Egyptian privet), are thus announced for sale: "Odours of paradise! O flowers of the hhenna!" A kind of cotton cloth, made by machinery, which is set in motion by a bull, is announced as "The work of the bull! O maidens!"

As the water of the wells in Cairo is somewhat brackish, numerous *sackckas* (water-carriers) obtain a livelihood by supplying the inhabitants with water from the Nile. During the season of the inundation, the sackckas draw their water from a canal which runs through the city; but at other times it is brought up from the river in skins by camels and asses, or by the water-crrrier himself. The water-skins of the camel are a pair of wide bags of ox-hide. The ass bears a goat-skin: so also does the sackcka, if he have no ass. His cry is

* "As Ephron did to Abraham, when the latter expressed his wish to purchase the cave and field of Machpelah." See Genesis xxxiii. 11.

"O! may God compensate me!" For a goat's skin of water brought from a distance of a mile and a half or two miles he obtains scarcely more than a penny. Many sackckas supply passengers in the streets with water. The water-skin of one of these carriers is provided with a long brass spout; and he pours the water into a brass cup, or an earthen vessel, for any one who would drink. Another set of water-carriers called hhemalees carry on their backs a vessel of porous grey earth. This serves to cool the water. Sometimes the water is scented with orange flowers, and often a sprig of naring is stuck in the mouth of his water-vessel. Other persons perambulate the streets with infusions of liquorice, sherbet, and other drinks for sale.

We have purposely abstained from any notice of the political condition of the Mooslims, because many changes have already taken place or are still in progress, so that any details which we could give would apply rather to the past than to the present. We will therefore conclude these sketches with a few detached notices of the domestic manners of the Mooslim Egyptians.

The Mooslims are formal and regular in their social manners; though generally very easy in their demeanour and free in conversation. Many of their commonest usages are founded on the precepts of their religion, such as the common salutation of "Peace be on you!" the reply to which is, "On you be peace, and the mercy of God, and his blessings!" This salutation is never addressed by a Mooslim to a person of another religion, nor *vice versâ*. Mr. Lane says that a European traveller not disguised by Turkish dress, often fancies that he is greeted with this salutation when it is really intended for his Mooslim attendant. When friends salute each other they join their right hands, and then each kisses his own hand, and puts it to his lips and forehead, or his forehead only, or his breast; or merely places it on his breast without kissing it. It is a customary mark of respect to conceal the hands in the sleeves of the ckooftan in the presence of a person of high rank. In polite society, when a person asks his friend, "How is your health?" the reply is, "Praise be to God!" and it is only by the tone of a voice in which the answer is made that the inquirer can infer whether his friend be well or ill. The ordinary compliments in use in Egyptian society are extremely numerous.

When a person visits the house of another he never enters unawares; and particularly if he have to ascend to an upper apartment he calls out for permission, or claps his hands, in order that the females of the house being warned of his approach may retire or veil themselves. On entering the room where the master of the house is seated, he gives the selam, which the master returns, and welcomes his guest with affability. To his superiors or equals he rises; and to the former and often to the latter he yields the most honourable place, which is the corner of the deewan. The upper end of the room is called the *sudr*, and the seat extending along it is more honourable than those at the sides. Visitors of inferior rank to the master never seat themselves at the upper end unless invited to do so, and then they often decline the honour. During the visit smoking is nearly always carried, on and coffee introduced; for, say the Arabs, "tobacco without coffee is like meat without salt."

It was once common in the houses of the rich to sprinkle the guest before he rose to take his leave with rose or orange-flower water, and to perfume him with the smoke of some odoriferous substance; but of late years this custom has declined. The Egyptians are very fond of perfumes, and often fumigate their apartments. It is also common to fumigate the cups from which they drink their coffee with the smoke of mastic; and wealthy persons sometimes impregnate the coffee itself with the fragrance of ambergris.

Mr. Lane describes the Egyptians as being extremely courteous to each other, with a peculiar grace and dignity in their manner of salutation and their general demeanour, combined with easiness of address, which seems natural to them; and is observable even in the peasants. The middle and higher classes of townspeople pride themselves upon their politeness and elegance of manners, and their wit and fluency of speech. Affability is a general characteristic of the Egyptians of all classes. It is common for strangers even in a shop, after mutual salutation, to enter into conversation with each other with as much freedom as if they were old acquaintances; and for one who has a pipe to offer it to another who has none; and it is not unusual, nor unpolite, for strangers to ask each other's names, professions and places of abode. They are generally very lively in their talk; but seldom noisy in their mirth; anything which pleases them being generally acknowledged by a smile or an exclamation.

But of the leading features of their character none is more remarkable than their religious pride. They regard persons of every other faith as the children of perdition; and such the Mooslim is early taught to despise. Falsehood was commended by their prophet, when it tended to obtain any advantage over the enemies of their faith; and hence, veracity is a virtue extremely rare in Modern Egypt; for, as Mr. Lane well observes, if people are allowed to lie in certain cases, they insensibly contract a habit of doing so in others. The Mooslims are also grossly superstitious; they have full faith in written charms and amulets, and in the influence of magic, and resort to the most absurd and ridiculous practices to protect themselves from enchantment, the evil eye, &c. They are moreover very indolent, obstinate, sensual, and often rapacious.

One pleasing feature in their characters is the humanity with which they treat the lower animals. Dogs are very numerous in Cairo, and although regarded as unclean, they are not only unmolested, but their wants are daily provided for. Small troughs are daily replenished with water for the dogs. In each street where there are shops, a sackcka is paid a small sum monthly, for sprinkling the street and filling the dogs' trough in that street. The dogs are of use in removing the offal thrown out from the butchers' shops and from houses. They generally avoid coming in contact with the men; as if they had an instinctive feeling that the people of the city regarded them as unclean. It is curious, also, that houseless cats in Cairo are fed at the expense of the ckadee; every afternoon a quantity of offal is brought into the great court before the Mahhakemeh, and the cats are allowed to eat. Many persons, when they want to get rid of a cat, send it to the ckadee's house, and let it loose in the great court.

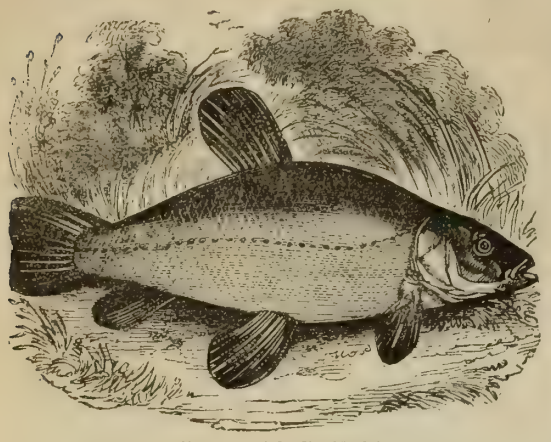
In conclusion, we may mention another prevailing characteristic of the modern Egyptians, which is, love of their country. In general they have a great dread of quitting their native land; and many who had determined to visit a foreign country for the sake of considerable prospective advantages, found their resolution give way as the time of their intended departure drew near.

It is an uncouth, a strange thing, and even unnatural, that neither a man's appetite, nor his health, nor the time of the day, nor his ordinary diet, shall be the reason or occasion of a man's drinking, or the rule whereby to try the convenient *when* or season of it; but whenever a man shall make such and such a bargain with me, or pay me for, or get payment from me of such and such thing, *that* must be the rule of my eating and drinking. What beast would be thus dealt with? There is a drinking of healths—by this means forcing, tempting, or occasioning drinking in others: this is one of the highest provocations to drunkenness. What can be the use of drinking healths? It was a notable saying of a great man, solicited to drink the king's health, "By your leave I will *pray* for the king's health and *drink* my own." This practice will probably be found to have arisen from heathen idolaters, who used libations to Jove, Bacchus, &c.: it is certain there is no vestige for it in Christianity, nor any reason for it.—Durham.

FRESH-WATER FISH.

VIII.

The Tench. (*Cyprinus Tinca.*—Linn.)



The Pike, fell tyrant of the liquid plain.
With ravenous waste devours his fellow train;
Yet howsoe'er he be with famine pined
The Tench he spares, a medicinal kind;
For when by wounds distressed, or sore disease,
He courts the salutary fish for ease,
Close to his scales the kind physician glides,
And sweats a healing balsam from his sides.

The above lines, extracted from the piscatory eclogues of Mr. Diaper, express an old and very remarkable superstitition, which Walton relates with amusing simplicity. After introducing the Tench as the "physician of fishes," he says:—

In every tench's head there are two little stones, which foreign physicians make great use of, but he is not commended for wholesome meat, though there be very much use made of them for outward applications. Rondeletius says, that at his being at Rome, he saw a great cure done by applying a tench to the feet of a very sick man. This, he says, was done after an unusual manner by certain Jews. And it is observed that many of those people have many secrets yet unknown to Christians; secrets that have never yet been written, but have been, (since the days of their Solomon, who knew the nature of all things, even from the cedar to the shrub,) delivered by tradition, from the father to the son, and so from generation to generation, without writing; or (unless it were casually), without the least communicating them to any other nation or tribe; for to do that they account a profanation. And, yet, it is thought that they, or some spirit worse than they, first told us that certain insects swallowed alive were a certain cure for the yellow jaundice. This, and many other medicines, were discovered by them, or by revelation; for, doubtless, we attained them not by study.

Well, this fish, besides his eating, is very useful, both dead and alive, for the good of mankind. But I will meddle no more with that, my honest humble art teaches no such boldness: there are too many foolish meddlers in physic and divinity, that think themselves fit to meddle with hidden secrets, and so bring destruction to their followers. But I'll not meddle with *them*, any farther than to wish them wiser; and shall tell you next (for I hope I may be so bold) that the tench is the *physician of fishes*, for the pike especially; and that the pike, being either sick or hurt, is cured by the touch of the tench. And it is observed that the tyrant pike will not be a wolf to his physician, but forbears to devour him though he be never so hungry.

This fish, that carries a natural balsam in him to cure both himself and others, loves yet to feed in very foul water, and amongst weeds. And yet, I am sure, he eats pleasantly, and, doubtless, you will think so too, if you taste him.

The remarks of modern observers seem to show that while we must dismiss as fabulous the wonderful healing qualities of the tench towards their fellow fishes, yet the surprising fact seems well ascertained, that the tench, from whatever cause, is secure from the attacks of the pike, the eel, and all other predatory fresh-water fish. Mr. Daniel and Mr. Salter state the fact in plain and unqualified terms:—

Whether the forbearance of the pike (says the latter gentleman) arises from respect to the healing qualities of the tench, or is to be attributed to a dislike of the slimy matter on its body, I know not; but I believe the tench is perfectly free from the persecution of the jack and pike, for I have never taken one that has been at all mutilated in its fins, tail, or any other part, or with any of those wounds or scars on the body which are so frequently met with by the angler among the small fish he takes: the eel also foregoes his voracity in regard to the tench, both by night and day. I have known several trimmers to be laid at night baited with live fish, roach, dace, bleak, and tench, each about six or seven inches long, and when those trimmers were examined in the morning, both eels and jack have been taken by the hooks baited with any other fish but the tench, which I found as lively as when put in the river the preceding night, without ever having been disturbed: this has been invariably the case during my experience; neither have I met with even one solitary instance to the contrary related by any of my acquaintance, who had numerous opportunities of noticing the singular circumstances of the perfect freedom from any hostile attack which the tench enjoys over every other inhabitant of the liquid element, arising from the continual conflicts among each other.

The tench seems to have been introduced into England from the lakes of Southern Europe. It is also found in other parts of the world. It inhabits either stagnant waters or a loamy clayey soil which forms a soft muddy bottom; or the most tranquil rivers which flow over a muddy bed. Mr. Daniel has taken tench out of Munden Hall Fleet, in Essex, where the water was so foul, and the weeds so thick, that the flews could hardly be sunk through them; the mud was also intolerably fetid, and had dyed the fish of an inky colour, and yet the tench were well grown, and of fine flavour; many that were taken weighed nine or ten pounds the brace. Sometimes the flesh of the tench is so tainted by the rank weeds or impurities of the water in which it constantly dwells, that it cannot be eaten; if, however, the fish be conveyed to other purer water it loses the offensive taint in a few days.

This fish is known as the *mucous blackish olive carp*. Its form varies with its age, but Mr. Blaine states as a general type, that it is thick in proportion to its length as three to one; when very full and well fed, it has been seen nearly as broad as it is long. The head is full, but proportionate to the bulky figure; the snout short, blunt, and bounded by a moderately sized and rounded mouth. It has two insignificant cirri, one at each angle of the mouth. As to its teeth, the remark of Walton on the carp applies here; for the tench is "to be reckoned amongst those leather-mouthed fish, which, I told you, have their teeth in their throat; and for that reason he is very seldom lost by breaking his hold, if your hook be once stuck in his chaps." The eyes are small and round; and the iris red. The gill-covers are of a bright yellow: the fins and tail large, and of a dark purplish hue. The general colour of the fish is a deep olive, with a golden tint shining through the scales. The scales are small and thin, and adhere closely to the skin; their number has been computed at not less than thirty thousand. The fins of the female are said to be much longer than those of the male. The viscid slime with which the surface of the scales is thickly covered, together with its reputed healing qualities, we have already noticed.

These fish spawn at the end of spring or the beginning of summer; they form a nidus about the roots and stems of aquatic plants. The young fry appear in a short time, and grow quickly, and are soon ready to add to the numbers of their race; for the tench is even more prolific than the carp: four hundred thousand ova have been counted in a single roe. Like the carp, the tench will live long out of water, and may be carried in wet moss to a considerable distance.

Mr. Daniel informs us of a most remarkable tench, the unusual form and size of which are not easily accounted for. A piece of water at Thornville Royal, Yorkshire, which had been ordered to be filled up, and wherein wood, rubbish, &c., had been thrown for years, was in November, 1801, directed to be cleared out. Persons were accordingly employed, and almost choked up by weeds and mud, so little water remained, that no one expected to find any fish, except a few eels; and yet nearly two hundred brace of tench of all sizes, and as many perch, were found. After the pond was supposed to be quite free, under some roots there seemed to be an animal, which was conjectured to be an otter: the place was surrounded, and on opening an entrance among the roots, a tench was found of a most singular form, having literally assumed the shape of the hole in which he had been confined. His length from fork to eye was two feet nine inches; the circumference, almost to the tail, was two feet three inches; the weight eleven pounds nine ounces and a quarter; the colour was also singular, the belly being of a char, or vermilion. This extraordinary fish after having been inspected by many gentlemen, was carefully put into a pond; but either from confinement, age, or bulk, it at first merely floated, and at last with difficulty swam gently away. At the time Mr. Daniel wrote it was alive and well.

The tench is in season from May to the end of September; one of about five pounds weight often costs as many shillings in the London market. It was once so little valued as to be eaten only by poor people.

There are many apparently well authenticated instances of fishes preserving their vitality, even in a frozen state; and it is even said that in northern latitudes advantage is taken of this circumstance to transport eels and perch from one locality to another. This vitality, however, does not exist in all species inhabiting the same latitudes. Mr. Swainson, from personal observation, says—

Upon the breaking up of the long and severe frost of this winter (1837—8), we have had the mortification of seeing the dead bodies of between thirty and forty fine tench floating on the surface of a pond in the garden, into which three or four pair had been put four years ago. The pond is of rain-water, with a soft muddy bottom, which has a depth of from two to four feet, and is fringed with many aquatic plants. Abundant shelter was thus afforded for the fish; and yet there can be no doubt, we think, that they have all been killed by cold. The people about the place assert that this mortality would not have happened, had holes been broken in the ice for the admission of air: but were this absolutely necessary in all cases, it would follow that the tench of all such ponds as had not been opened would have been likewise killed.

It forms a striking contrast to the power which some fish undoubtedly have of preserving their vitality through very low degrees of temperature, to find that many of them can not only exist, but actually breed, in hot springs of various countries at temperatures varying from 80° to 120° Fahr. But the most startling fact is that recorded by Humboldt; he says that during his researches in tropical America, he found fish thrown up alive from the bottom of an exploding volcano, along with water so hot as to raise the thermometer to 210°, being two degrees only below boiling. Mr. Swainson judiciously remarks:—

Considering this excessive heat, it is, we think, too much to suppose that the water in which these fish habitually resided was always of such a temperature. It is a well-known fact, that springs in the vicinity of volcanoes are very often considerably heated *before* an eruption takes place; and until we are in possession of further evidence on this point, we believe that such was the case in the present instance: the internal fires, in all probability, had greatly heated the water previous to its having been expelled from its natural basin, before the increased heat had killed the fishes; a supposition much more probable, than that the fishes would live and sport in a fluid whose temperature would be sufficient to prepare them for the table.

COMMERCE OF LEECHES.

All our leeches are imported from Hamburg. The Hamburg dealers draw their supplies from the Ukrain. "Having exhausted all the lakes of Siberia, Bohemia, and other more frequented parts of Europe, the buyers are now rolling gradually and implacably eastward, carrying death and desolation among the leeches in their course, sweeping all before them, till now they have got as far as Pultava, the pools and swamps about which are yielding them great captures," (Brenmer, *Excurs. in the Interior of Russia.*)

Leeches are sometimes imported in bags but more usually in small barrels, each holding about 2,000, the head being made of stout canvas, to admit the air. The best vessels for preserving these animals are unglazed brown pans or wooden tubs. The dealers have a notion (and possibly a correct one) that the leaden glazing is injurious. These pans should be very little more than half filled with soft water (pond, river, or rain water.) This does not require changing so often as is commonly supposed. In very hot weather, or when the water has become bloody, or otherwise much discoloured, it should be changed every day or so; otherwise, in summer every four or five days or a week, in winter once a month, is believed by large dealers to be sufficient.

The *consumption of leeches* must be enormous. Some years ago it was stated that four principal dealers in London imported on the average, 600,000 monthly, or 7,200,000 annually. (Price, *Treat. on Sanguisuct.*) Feé (*Cours d'Hist. Nat.*) says, "It is estimated that 3,000,000 are annually consumed in Paris; and as the population of Paris is to that of the whole of France as one is to thirty-three, it follows that, independently of exportation, 100,000,000 are consumed annually, which is equivalent three leeches annually for each person. Now, if we estimate the average price at fifty francs per thousand, we shall have the enormous sum of five millions of francs paid for this one article of our materia medica."—Pereira.

THE ALPS AFTER SUNSET.

While the eye is feasting on the rich tints which succeed to the bright light of day, and wishes they might last for ever, the rose colour gradually dies away, and its place is taken by a livid, dead white, resembling so fearfully that of a corpse, that I felt quite shocked as well as startled by the change,—nor have I ever met with any one whose nerves were not more or less disturbed by this painful transition from the blush of health, as it were, to the paleness of death! I have seen very wild deserts in Peru and else where, and many other scenes of desolation in the world, but none which has struck me with so deep a feeling or melancholy as the sight of Mont Blanc during the period, fortunately a brief one, in which this livid hue is spread over it. Before the shades of night finally settle over all, a very slight and scarcely perceptible return of the rose-tint is often visible on the snow, a sort of reanimation of the scene, which is most cheering and consolatory.—Captain Basil Hall.

EVENTIDE.

There is an eventide in the day, and hour when the sun retires and the shadows fall, and when nature assumes the appearance of soberness and silence. It is an hour which in all ages the good have loved, as bringing with it sentiments and affections more valuable than all the splendour of the day. Its first impression is to still all the turbulence of thought or passion which the day may have brought forth. When all is silent around us, we feel a kindred stillness breathe upon our souls, and calm them from the agitations of society. In the day we live with men, in the eventide we begin to live with nature. We see the world withdrawn from us, the shades of night darken over the habitations of men, and we feel ourselves alone. It is an hour fitted to still, but with a gentle hand, the throb of every unruly passion, and to waken in our hearts those pure affections which the glare of day may have dissolved. While the shades of night darken upon our dwellings, the splendours of the firmament come forward to our view. Heaven opens to our eyes the radiance of a sublimer being; and while we forget for a time the obscurity of earthly concerns, we feel that there are "yet greater things than these."—Alison.

NATIVES OF TIERRA DEL FUEGO.

The Indians of Tierra del Fuego appear to be generally inferior to those of Patagonia, (see p. 99.) They are in person considerably shorter and smaller. Captain King gives the following account of a party who visited his ship, the *Adventure*, during his survey of the southern shores of South America, in 1827.

These natives conducted themselves quietly, and, except one of the women, who wished to keep a tin-pot in which some water had been given her, made no attempt to pilfer. Their canoes were paddled by the women, occasionally helped by the men. One or two of the former were young and well featured, but the rest were hideous; and all were filthy and most disagreeable, from the quantity of seal-oil and blubber with which they had covered their bodies. After we had obtained, by barter, all the articles they had to dispose of, I presented them with red caps and medals, of which they were very proud.

Their astonishment was much excited, and they were pleased by hearing a watch tick; but I believe I had very nearly, though unintentionally, given great offence, by cutting off a lock of hair, from the head of one of the men. Assuming a grave look, he very carefully wrapped the hair up, and handed it to a woman in the canoe, who, as carefully, stowed it away in a basket, in which is kept her beads and paint; the man then turned round, requesting me, very seriously, to put away the scissors, and my compliance restored him to good-humour.

They were ill-clothed, with mantles made of guanaco, or otter-skins, but not so neatly as those of the Patagonians. Their bodies were smeared over with a mixture of earth, charcoal, or red ochre, and seal-oil; which, combined with the filth of their persons, produced a most offensive smell. Their hair was bound by a fillet of plaited twine, made perhaps with strips of bark, and a few of them had it turned up; but to none did it appear to be an object of attention, except one of the young women, who repeatedly combed and arranged hers with the well-toothed jaw of a porpoise.

The next morning, seeing us under weigh, they came alongside, and tried to induce us to anchor again. One young man was very importunate, and his wife used all her fancied allurements to second his proposal, So highly did they esteem beads and buttons, that a few of each would have purchased the canoe, the wife, and children, their dogs, and all the furniture.

Captain Stokes says that the average height of those that he met with was five feet, five inches; their habit of body spare; the limbs badly turned, and deficient in muscle; the hair of their head black, straight, and coarse; their beards, whiskers, and eyebrows, naturally exceedingly scanty, are carefully plucked out; their forehead is low; the nose rather prominent, with dilated nostrils; their eyes are dark, and of a moderate size; the mouth is large, and the under lip thick; their teeth are small and regular, but of a bad colour. They are of a dirty copper colour; their countenance is dull, and devoid of expression. For protection against the rigours of these inclement regions, their clothing is miserably suited; being only the skin of a seal, or sea-otter, thrown over the shoulders, with the hairy side outward. The tracts they inhabit are altogether destitute of four-footed animals; they have not domesticated the geese or ducks which abound here, of tillage they are utterly ignorant, and the only vegetable productions they eat are a few wild berries, and a kind of sea-weed.

Their principal food consists of muscles, limpets, and sea-eggs, and, as often as possible, seal, sea-otter, porpoise, and whale. Former voyagers have noticed the avidity with which they swallow the most offensive offal, such as decaying seal-skins, rancid seal and whale-blubber, &c. When on board my ship, they ate or drank greedily whatever was offered to them, salt-beef, salt-pork, preserved meat, pudding, pea-soup, tea, coffee, wine, or brandy—nothing came amiss. One little instance, however, showed what they preferred. As they were going ashore, a lump of the tallow used for arming the lead was given to them, and received with particular delight. Is was scrupulously divided, and placed in the little baskets which they form of rushes, to be reserved for eating last, as the richest treat.

The nature of their domestic ties we had no opportunity of observing; their manner towards their children, is affectionate and caressing. I often witnessed the tenderness with which they tried to quiet the alarms our presence at first occasioned, and the pleasure which they showed when we bestowed upon the little ones any trifling trinkets.

Captain King thus speaks of a party that visited his ship in March, 1828:—

They conducted themselves very quietly during their stay on board, with the exception of one who tried to pick my pocket of a handkerchief; the offender was ordered out of the vessel, and there was no further attempt to pilfer. They wished to go below, but this was not permitted, because the odour of their oily persons was scarcely tolerable, even in the open air. As to food, tallow candles, biscuit, beef, plum-pudding, were equally liked, and swallowed most voraciously. One of them was discovered taking the tallow out of the end of the deep sea-lead and eating it, although mixed with sand and dirt.

Their method of carving their food is similar to that of the Esquimaux Indians; a piece of blubber being held in the left hand, a corner of it is taken between the teeth, and it is then cut by a knife, held under-handed, into strips backward and forward, without passing the instrument entirely through, so that when the operation is finished, the piece draws out into a long band, about an inch thick, formed by the connected strips. The whole affair from first to last is most offensive to the sight, and the countenance of the carver is beyond description, for his eyes being directed to the blubber, squint shockingly, and give his ugly face a hideous appearance. The strip of blubber is next divided among the party, each of whom proceeds to extract its oily juices by drawing it through his teeth and sucking it, after which it is warmed in the fire to facilitate division into small pieces, which are swallowed, or bolted, without mastication. Morsels of this dainty food were given not only to the elder children, but even to infants at the breast. The next day, the women had daubed their faces all over with bright red ochre, to add to their beauty, no doubt.

The following is Captain Fitz-Roy's account of his first interview with the Fuegians, during his operations in her Majesty's ship the *Beagle*.

On the 13th April, 1829, when working near the land, against a light southerly breeeze, we saw a small canoe paddling along shore, and some people walking on the beach. While the ship was standing off, I went to them, being the first savages I had ever met. In the canoe were an old man, his daughter, and a child, and on shore were two Fuegian men with several dogs. Their figures reminded me of drawings of the Esquimaux, being rather below the middle size, wrapped in rough skins, with their hair hanging down on all sides, like old thatch, and their skins of a reddish-brown colour, smeared over with oil, and very dirty. Their features were bad, but peculiar; and if physiognomy can be trusted, indicated cunning, indolence, passive fortitude, deficient intellect, and want of energy. I observed that the forehead was very small, and ill-shaped; the nose was long, narrow between the eyes, and wide at the point, and the upper lip long and protruding. They had small, retreating chins; bad teeth; high cheek-bones; small Chinese eyes, at an oblique angle with the nose; coarse hair; wide ill-formed mouths, and a laugh as if the upper-lip were immoveable. The head was very small, especially at the top and back; there were very few bumps for a craniologist. They asked earnestly for "tabac, tabac," but seemed very timid. We bartered some biscuit and old knives for a few of their arrows, skins, spears, &c.

Their canoes, twenty-two feet long, and about three wide, were curiously made of the branches of trees, covered with pieces of beech-tree bark, sewed together with intestines of seals. A fire was burning in the middle, upon some earth, and all their property, consisting of a few skins and bone-headed lances, was stowed at the ends.

The young woman would not have been ill-looking, had she been well scrubbed, and all the yellow clay with which she was bedaubed, washed away. I think they use the clayey mixture for warmth rather than for show, as it stops the pores of the skin, preventing evaporation, and keeping out the cold air. Their only clothing was a skin, thrown loosely about them; and their hair was much like a horse's mane that has never been combed.

Captain Fitz-Roy subsequently found the natives extremely troublesome, and strongly recommends that weakly manned vessels should avoid them if numerous. In some scuffles with his boat's crew they showed great strength. "It is astonishing," he says, "how very correctly they throw stones, and to what a distance; when the

first stone fell close to us, we all thought ourselves out of musket-shot."

The *Adventure* and *Beagle* lost several boats during their surveying expedition, of which more than one was stolen by the Fuegians. Captain Fitz-Roy was determined to pursue the thieves, but his endeavours to seize the boat were fruitless. In the course of his search he made many prisoners, most of whom subsequently escaped. Thinking that benefit might accrue from having some of them taught English, Captain Fitz-Roy brought to England four of the natives; two young men who were named by the crew "York Minster" and "Boat Memory;" a girl whom they called "Fuegia basket," and a boy who was called "Jemmy Button," because the price given for him was a large shining mother-of-pearl button.

At Monte Video, on the voyage home, these Indians were taken ashore to view the town. "The apparent astonishment and curiosity excited by what they saw," says Captain Fitz-Roy, "extraordinary to them as the whole scene must have been, were much less than I had anticipated; yet their conduct was interesting, and each day they became more communicative. It was here that I first learned from them that they make a practice of eating their enemies taken in war. The women, they explained to me, eat the arms; and the men the legs; the trunk and head were always thrown into the sea."

The acts of cannibalism occasionally committed by their countrymen, were explained to me in such terms, and with such signs, that I could not possibly misunderstand them; and a still more revolting account was given, though in a less explicit manner, respecting the horrible fate of the eldest women of their own tribes, when there is an unusual scarcity of food. This half-understood story I did not then notice much, for I could not believe it, but as, since that time, a familiarity with our language has enabled them to repeat this horrid tale more circumstantially, and as it has been confirmed by the testimony of other Fuegians, I no longer hesitate to state my firm belief of this strange and diabolical atrocity.

Soon after their arrival in England Boat Memory died of small-pox; the others were placed with a schoolmaster at Walthamstow for board and education.

I took them myself, (says the Captain,) from the coach-office to Walthamstow; they were glad to see me, but seemed bewildered by the multitude of new objects. Passing Charing Cross, there was a start and exclamation of astonishment from York. "Look," he said, fixing his eyes on the lion upon Northumberland House, which he certainly thought alive, and walking there. I never saw him show such sudden emotion at any other time. They were much pleased with the rooms prepared for them at Walthamstow; and the schoolmaster and his wife were equally pleased to find the future inmates of their house very well-disposed, quiet, and cleanly people; instead of fierce and dirty savages. At Walthamstow they remained from December, 1830, till October 1831, when they were again taken on board the Beagle, to return to their native land. A young man, named Richard Matthews, accompanied them with the intention of remaining at Tierra del Fuego to instruct the savages. Not a few boats were required to transport to the ship the large cargo of clothes, tools, crockery-ware, books, and various things which the families at Walthamstow and other kind-hearted persons had given.

When approaching Tierra del Fuego, (continues Captain Fitz-Roy,) they seemed to be much elated at the certainty of being so near their own country; and the boy was never tired of telling us how excellent his land was—how glad his friends would be to see him—and how well they would treat us in return for our kindness to him. The attentions which York paid to his intended wife, Fuegia, afforded much amusement to our party. He had long shown himself attached to her, and had gradually become excessively jealous of her good-will. He told me that he would rather live with Jemmy Button in the Tekeenica country, than go to his own people. This was a complete change in his ideas, and I was very glad of it; because it might be far better that the three, York, Jemmy, and Fuegia, should settle together. I little thought how deep a scheme Master York Minster had in contemplation.

We reached Woollya, and selected a space, favourably situated for our encampment, landed, marked a boundary-line, placed sentries, and made the various arrangements necessary for receiving the anticipated visits of some hundred natives. Canoes began to arrive, their owners hauled them ashore on the beach, sent the women and children to old wigwams at a little distance, and hastened themselves to see the strangers. While I was engaged in watching the proceedings at our encampment, and poor Jemmy was getting out of temper at the quizzing he had to endure on account of his countrymen, whom he had extolled so highly until in sight, a deep voice was heard shouting from a canoe more than a mile distant. Up started Jemmy, from a bag full of nails and tools which he was distributing, leaving them to be scrambled for by those nearest, and, upon a repetition of the shout, exclaimed, "My brother!" He then told me that it was his eldest brother's voice, and perched himself on a large stone to watch the canoe, which approached slowly, being small, and loaded with several people. When it arrived, instead of an eager meeting, there was a cautious circumspection that astonished us. Jemmy walked slowly to meet the party, consisting of his mother, two sisters, and four brothers. The old woman hardly looked at him before she hastened away to secure her canoe, and hide her property, all she possessed—a basket containing tinder, fire-stone, paint, &c., and a bundle of fish. The girls ran off with her without even looking at Jemmy; and the brothers (a man and three boys) stood still, stared, walked up to Jemmy, and all round him, without uttering a word. Animals when they meet show far more animation and anxiety than were displayed at this meeting. Jemmy was evidently much mortified, and to add to his confusion and disappointment, as well as my own, he was unable to talk to his brothers, except by broken sentences, in which English predominated. After a few minutes had elapsed, his elder brother began to talk to him; but although Jemmy understood what was said, he could not reply. York and Fuegia were able to understand some words, but could not, or did not choose to speak.

Many of the natives assisted us in carrying wood, and bringing bundles of grass or rushes to thatch the wigwams which they saw we were making, in a pleasant sheltered spot, near a brook of excellent water. One wigwam was for Matthews, another for Jemmy, and a third for York, and Fuegia. York told me that Jemmy's brother was "very much friend," that the country was "very good land," and that he wished to stay with Jemmy and Matthews. A small plot of ground was selected near the wigwams, and, during our stay, dug, planted and sowed with potatoes, carrots, turnips, beans, peas, lettuces, onions, leeks, and cabbages. Matthews and his party—Jemmy, York, and Fuegia—went to their abode in the three new wigwams. In that made for Matthews, Jemmy also took up his quarters at first: it was high and roomy for such a construction; the space overhead was divided by a floor of boards, brought from the ship, and there most of Matthews's stores were placed, but the most valuable articles were deposited in a box, which was secretly hid in the ground underneath the wigwam, where fire could not reach. Matthews was steady and as willing as ever, neither York nor Jemmy had the slightest doubt of their being all well-treated; so trusting that Matthews, in his honest intention, to do good, would obtain that assistance in which he confided, I decided to leave him for a few days.

Nine days afterwards we returned to Woollya, and the sight of several bits of cloth with which the Indians we saw on shore were decorated, made me feel very anxious about Matthews and his party. Our boats touched the shore; the natives came hallooing and jumping about us, and then, to my extreme relief, Matthews appeared, dressed, and looking as usual. After him came Jemmy and York, also dressed and looking well; Fuegia they said was in a wigwam. Matthews gave a bad account of the prospect which he saw before him, and told me that he did not think himself safe among such a set of utter savages as he found them to be. No violence had been committed, beyond holding down his head by force, as if in contempt of his strength; but he had been harshly threatened by several men, and from the signs used by them, he felt convinced they would take his life. Sometimes a party of them gathered round him, and if he had nothing to give them, teased him by pulling the hair of his face, pushing him about, and making mouths at him; his only partisans were the women. Now and then he left Jemmy to guard the hut, and went to the natives' wigwams, where the women always received him kindly,

making room for him by their fire, and giving him a share of whatever food they had, without asking for anything in return. York and Fuegia fared very well; they lost nothing, but Jemmy was sadly plundered, even by his own family. Our garden, upon which much labour had been bestowed, had been trampled over repeatedly, although Jemmy had done his best to prevent the people from walking there. When questioned about it, he looked very sorrowful, and, with a slow shake of the head, said, "My people very bad; great fool; know nothing at all; very great fool." It was soon decided that Matthews should not remain. I considered that he had already undergone a severe trial, and ought not to be again exposed to such savages, however willing he might be to try them farther, if I thought it right. The next difficulty was how to get Matthews's property safely into our boats in the face of a hundred Fuegians. This, however, was accomplished, and after distributing several useful articles, we departed from the wondering throng assembled on the beach.

On the 5th of March, 1834 (thirteen months afterwards), the Beagle anchored at Woollya. The wigwams in which we had left York, Jemmy, and Fuegia were found empty, though uninjured: the garden had been trampled over, but some turnips and potatoes of moderate size were pulled up by us, and eaten at my table, a proof that they may be grown in that region. Not a living soul was visible anywhere; the wigwams seemed to have been deserted many months; and an anxious hour or two passed, after the ship was moored, before three canoes were seen in the offing, paddling hastily towards us, from the place now called Button Island. Looking through a glass I saw that two of the natives in them were washing ther faces, while the rest were paddling with might and main: I was then sure that some of our acquaintances were there, and in a few minutes recognised Tommy Button, Jemmy's brother. In the other canoe was a face which I knew, yet could not name. "It must be some one I have seen before," said I,—when his sharp eye detected me, and a sudden movement of the hand to his head (as a sailor touches his hat) at once told me that it was indeed Jemmy Button—but how altered! I could hardly restrain my feelings, and I was not, by any means, the only one so touched by his squalid, miserable appearance. He was naked, like his companions, except a bit of skin about his loins; his hair was long and matted, just like theirs; he was wretchedly thin, and his eyes were affected by smoke. We hurried him below, clothed him immediately, and in half an hour he was sitting with me at dinner in my cabin, using his knife and fork properly, and in every way behaving as if he had never left us. He spoke as much English as ever, and, to our astonishment, his companions, his wife, his brothers and their wives, mixed broken English words in their talking with him. Jemmy recollected every one well, and was very glad to see them all, especially Mr. Bynoes, (the surgeon,) and James Bennett. I thought he was ill, but he surprised me by saying that he was "hearty, sir, never better," that he had not been ill, even for a day, was happy and contented, and had no wish whatever to change his way of life. He said that he got "Plenty fruits," (excrescences of the birch-trees and berries,) "plenty birdies," "ten guanaco in snow time," and "too much fish." Besides, though he said nothing about her, I heard that there was a good-looking young woman (for a Fuegian) in his canoe, who was said to be his wife. Directly this became known, shawls, handkerchiefs, and a gold-laced cap appeared, with which she was speedily decorated; but fears had been excited for her husband's safe return to her, and no finery could stop her crying until Jemmy again showed himself on deck. While he was below his brother Tommy called out in a loud tone—"Jemmy Button, canoe come!" After some time, the three canoes went ashore, laden with presents, and their owners promised to come again early next morning. Jemmy gave a fine otter-skin to me, which he had dressed and kept purposely; another he gave to Bennett.

Next morning, Jemmy shared my breakfast, and then we had a long conversation by ourselves; the result of which was, that I felt quite decided not to make a second attempt to place Matthews among the natives of Tierra del Fuego. Jemmy told me that he knew very little of his own language; that he spoke some words of English, and some Tekeenica, when he talked to his family; and that they all understood the English words he used. York and Fuegia left him some months before our arrival, and went in a large canoe to their own country. The last act of that cunning fellow was to rob poor Jemmy of all his clothes; nearly all the tools his Tekeenica "friends" had left him; and various other necessaries. Fuegia was dressed as usual, and looking well, when they decamped: her helpmate was also well clothed, and hardly lost anything I left with him. Jemmy said "York very much jaw," "pick up big stones." "all men afraid." Fuegia seemed to be very happy, and quite contented with her lot. Jemmy asserted that she helped to "catch (steal) his clothes," while he was asleep, the night before York left him naked.

It was generally remarked that his family were become considerably more humanized than any savages we had seen in Tierra del Fuego: that they put confidence in us; were pleased by our return; that they were ready to do what we could explain to be for their interest; and in short, that the first step towards civilization—that of obtaining their confidence—was undoubtedly made: but an individual, with limited means, could not then go farther. The whole scheme, with respect to establishing a missionary with the Fuegians who were in England, among their countrymen, was on too small a scale, although so earnestly assisted by Mr. Wilson, Mr. Wigram, Mr. Coates, and other kind friends.

I cannot help still hoping that some benefit, however slight, may result from the intercourse of these people,—Jemmy, York, and Fuegia, with other natives of Tierra del Fuego. Perhaps a ship-wrecked seaman may hereafter receive help and kind treatment from Jemmy Button's children; prompted, as they could hardly fail to be, by the traditions they will have heard of men of other lands; and by an idea, however faint, of their duty to God as well as their neighbour. That Jemmy felt sincere gratitude is, I think, proved by his having so carefully preserved two fine otter skins, as I mentioned; by his asking me to carry a bow and quiver full of arrows to the schoolmaster at Walthamstow, with whom he had lived; by his having made two spear-heads expressly for Mr. Darwin; and by the pleasure he showed at seeing us all again.

As nothing more could be done, we took leave of our young friend and his family, every one of whom was loaded with presents, and sailed away from Woollya.

WORLDLY FRIENDSHIP.

There is within the world in which we dwell
A friendship answering to that world full well;
An interchange of looks and actions kind,
And, in some sense, an intercourse of mind;
A useful commerce, a convenient trade,
By which both parties are the happier made:
And, when the thing is rightly understood
And justly valued, it is wise and good.

I speak not here of friendships that excite
In boys at school such wonder and delight,
Of high heroic friends, in serious strife,
Contending which should yield a forfeit life—
Such wondrous love, in their maturer days,
Men, if they credit, are content to praise.

I speak not here of friendships true and just,
When friend can friend with life and honour trust;
Where mind to mind has long familiar grown,
And every failing, every virtue known.
Of these I speak not; things so rich and rare,
That we degrade with jewels to compare,
Or bullion pure and massy. I intend
To treat of one whose neighbour called him friend,
Or called him neighbour; and with reason good—
The friendship rising from the neighbourhood.
A sober kind, in common service known;
Not such as is in death and peril shown:
Such as will give or ask a helping hand,
But no important sacrifice demand;
In fact, a friendship that will long abide,
If seldom rashly, never strongly, tried.
Yes! these are sober friendships, made for use;
And much convenience they in life produce.
Like a good coat, that keeps us from the cold,
The cloth of frieze is not a cloth of gold;
But neither is it piebald, pieced, and poor,—
'Tis a good useful coat, and nothing more.—Crabbe.

LONDON:
JOHN WILLIAM PARKER, WEST STRAND.
Published in Weekly Numbers, Price One Penny, and in Monthly Parts Price Sixpence.
Sold by all Booksellers and Newsvenders in the Kingdom.

THE

Saturday Magazine.

No. 595. OCTOBER 9TH, 1841. {PRICE ONE PENNY.

THE COTTAGES OF SWITZERLAND

SWISS COTTAGES.

Thus every good his native wilds impart,
Imprints the patriot passion on his heart;
And e'en those ills that round his mansion rise
Enhance the bliss his scanty fund supplies:
Dear is that shed to which his soul conforms,
And dear that hill which lifts him to the storms;
And as a child, when scaring sounds molest,
Clings close and closer to the mother's breast,
So the loud torrent, and the whirlwind's roar,
But bind him to his native mountains more.—GOLDSMITH.

SWITZERLAND occupies a singular position among European nations. It has no connexion whatever with the ocean, but is hemmed in by three large countries, Germany, France, and Italy. This circumstance has naturally given to its inhabitants and its institutions a certain mixed resemblance to all three of those countries. But this resemblance is less striking than would in most cases be found, on account of the mountain-chains which serve as a barrier between Switzerland and the neighbouring countries. These mountains are more particularly remarkable for their size and extent on the southern side of Switzerland, where they separate it from Italy, and this is precisely the part where the influence of a neighbouring nation has been least felt, for Switzerland and its inhabitants resemble Italy much less than it resembles either Germany or France. But there is a peculiar character about the Swiss, which, in truth, separates them from all three of the countries we have named. This is as observable in their dwellings as in any part of their economy. A Swiss cottage is associated in our minds with a kind of edifice differing a good deal from those of Germany, Italy, or France.

A Swiss cottage in the Canton de Vaud, according to the description of M. Simond, very frequently bears the following character. It is not unusually of the enormous size of eighty or one hundred feet square. It is very low, but has an exceedingly lofty shingle roof, which is loaded with large stones, to prevent it from being blown away with the wind, and projects, in the piazza shape, over an outside gallery, up a flight of stairs. This is properly the ground floor, or rather the snow floor, for the lower floor, ramparted as it is with fire-wood, and buried in snow in winter, becomes a sort of cellar, where the provisions are kept, and where the cows are housed. A large door, in the centre of the building, gives entrance to the various farming carriages and implements, as well as to all the winter fodder: thus the stable, the barn, and the dwelling, are all under the same roof, with all the apparatus of home manufactures, carried on in winter, and their produce, cheese, butter, &c The family have access to all parts of this their domestic world, without ever stepping out of doors. These houses (which a single spark might set in a blaze), as well as all the houses in the Canton de Vaud, are obliged by law to be insured. The accounts are kept by government, free from any contingent charges of administration, and the proprietors of houses pay no premium, but only their respective share of losses by fire. The houses are estimated at three-fourths of

their value only, and the aggregate of losses is equal to about one in a thousand yearly.

The same traveller, being located for a time in another part of Switzerland, gives a description of a cottage apparently rather more humble than the average run of them. It was, however, built of larch, and was spacious and clean. It had a large common room up stairs, with several windows to it. The furniture of the room consisted of a long bench round three sides, and a long table before it: an enormous earthen stove was so placed and constructed as to answer the purpose of steps to ascend to the next story above, by an opening in the ceiling of the room. The kitchen, in another part of the building, had no chimney, but the smoke issued out through a hole in the roof, covered with a shutter that was opened or closed by pulling a rope. Above the first floor, built of stone, the structure was composed of square beams, placed one over the other, and dovetailed at the angles of the building, the whole covered with boards, within and without. Although the sides of the building showed only one story above the ground floor, yet the gable end, or rather front, had four or five, each marked by a row of small contiguous windows. This front was decorated with passages from the Scriptures, inscribed very neatly on the wood. The wood was not painted, but the turpentine, which had long before oozed through its pores, had hardened on the surface to a kind of varnish.

An entertaining English writer, lately deceased, Mr. Inglis, has given a very detailed account of the houses, within and without, in a part of Switzerland called *Engadine*:—

During my day's walk I passed through many large villages, the names of which I do not recollect, but whose size appeared to me very disproportionate to the extent of the valley in which I found them. The great size of the houses, however, partly accounts for this. In no part of Europe have I seen the houses of the natives so large as I found them throughout the whole of the Unter and Ober Engadine.

He then proceeds to state that a village in every part of the Engadine is the same. It consists of one street, long or short, as the case may be, with some few and very short lateral openings, scarcely deserving the name of streets. In some part of the street there is an open space, with a fountain in the centre,—plain, but not ineligant, and closely adjoining the village, but seldom forming a part of it, is the village church,—in size and architecture nearly resembling the country churches in Scotland.

The houses in these villages are of an enormous size: indeed Mr. Inglis affirms that they cover an area greater than that occupied by any two houses in Portland Place. Their height never exceeds two stories, and the roof, which is covered with square pieces of wood, laid on like slates, upon which trunks of fir-trees are placed transversely, falls back at a very acute angle. The exterior of the houses presents a good deal of decoration. Upon the white plaster copies of Greek and Roman designs are painted in lead colour: painted Doric or Corinthian columns adorn the door-posts, and the imitation is so good as to deceive a spectator until he approaches near. The door or gateway is generally arched, and painted with some tasteful design. Sometimes an imitation of a Greek pediment is painted over the windows, and in some instances every part of the exterior is painted with one uniform design, the whole front and sides being set off with pillars, pilasters, pediment, &c.; so as to give at a distance some resemblance to a Grecian temple.

It is difficult (says Mr. Inglis) to understand how this custom and taste have arisen. The painting is for the most part old, and in some places has been renewed, but not with equal skill; and upon the houses recently erected nothing of the kind has been attempted. These, however, are but few, and form a very trifling exception when speaking of the appearance of the Engadine villages. I cannot conceive any other origin of so singular and so universal a practice than that some Grison architect, who had left his native valleys, acquired in Italy a taste for the classic models of that land, and returning to his country, exercised his profession, and, at the same time, fed his recollection of the glorious things he had seen, by adorning the buildings of his native village. The taste might soon spread, and in the six or eight villages of the Ober Engadine a few years only would be required to satisfy its demands. In all that I have yet said, or may still say, respecting the villages and houses of the Engadine, I speak with reference to both the Ober and Unter Engadine, with the exception of the painting upon the walls, which I think is confined to the Ober Engadine; at all events it does not extend to more than one village in the lower valley. Let me add to this description of the exterior of the houses, that upon some part of the wall, generally over the gate, is found an inscription, sometimes in Roman, sometimes in Latin, indicating the period at which the house was built, setting forth the name of the builder, and containing, besides, a recommendation of the house and its inhabitants to the protection of God.

Mr. Inglis then describes the interior of these dwellings. Within the gateway or door is a spacious chamber, with an earthen floor, which serves as a sort of inner court-yard, and which presents a strange contrast to the ornamented gateway. This apartment is used as a general store-house. Ranged on one side are all the utensils required in a dairy, such as churns, cheese-presses, and the innumerable flat wooden dishes, used for the reception of the milk. On another side are various agricultural implements, together with ladders, saws, and other tools. Several spinning-wheels stand in one corner: a quantity of skins are heaped in another: and one end is always devoted to the fuel, and is heaped with wood as high as the roof. From this large store-room are entrances leading to the different apartments, the kitchen, the eating rooms, and other rooms, varying in number according to the size of the house and the necessities of the family. The furniture of these rooms is always abundant, substantial, and sometimes ornamented with carved wood-work. The sleeping-rooms are almost always above stairs, but scarcely correspond in convenience with the lower part of the house.

Swiss houses appear to have been built of wood for many ages past: probably the majority of them have never been formed of any other material. Coxe, writing sixty years ago, respecting the canton of Appenzel, says:—

In our way to Appenzel we entered several houses which were all built of wood, neatness and convenience being the principal object of the owners: such a remarkable cleanliness prevailed throughout as afforded a most striking proof of the general attention which people pay to that essential article. A continued chain of these cultivated mountains, richly clothed with wood, and thickly studded with hamlets, exhibit a series of landscapes inexpressibly pleasing.

In another passage, speaking of Aargau, he says:—

The houses, like those of Appenzel and Glarus, are generally of wood, and it was a natural observation of one of our servants, in passing through a continued chain of rocks, that as there was no deficiency of stone, it seemed extraordinary to employ wood alone for the purposes of building. But it may be remarked that these wooden houses are soon constructed and easily repaired, and being formed in a compact manner, with small rooms, and low ceilings, are sufficiently warm even for so cold a climate. The chief objection arises from the danger of fire, which, however, is in some measure obviated by the method of building their cottages detached from each other. But this observation does not hold with respect to some of the largest burghs, which are exposed to the ravages of this dreadful calamity.

Of course the dwellings in Switzerland vary with the place where they are built, and with the means of those to whom they belong; but the cut at the head of this article may be considered as a general representative of the houses in the romantic valleys of that country.

MEMOIR OF THE LATE Dr. THOMAS YOUNG.

In 1831, a memoir of Dr. Thomas Young, one of the most distinguished men of the age, was printed solely for private distribution, and with the hope, modestly expressed on the part of the writer, that the "imperfect sketch" then produced would afterwards be filled up by "some abler hand."

With the exception of the short but masterly sketch given by the celebrated M. Arago, in the *Revue des Deux Mondes*, this hope has not been yet fulfilled; but as the name of Young, and the fame of his extraordinary attainments, may have reached many of our readers, and excited a desire for further information respecting this highly gifted individual, we proceed to lay before them such details as may be conveniently gathered from the sources above alluded to.

Thomas Young was born at Milverton, in Somersetshire, on the 13th of June, 1773. His parents were Quakers, and of the strictest of that sect: his mother was a niece of Dr. Richard Brocklesby, a physician of eminence, who was connected with some of the most distinguished literary and political characters of his time, and who numbered among his most intimate friends Johnson, Burke, and Windham. To the influence of the early impressions of the Quaker tenets Dr. Young "was accustomed to attribute in some degree the power he so eminently possessed of an imperturbable resolution to effect any object on which he was engaged, which he brought to bear on everything he undertook, and by which he was enabled to work out his own education almost from infancy, with little comparative assistance or direction from others." He passed the first years of his life at the house of his maternal grandfather, Mr. Robert Davies, of Minehead, whom active commercial engagements had not prevented from cultivating the classics.

Young appears to have been a forward, if not a precocious child; but unlike the majority of such children, he abundantly fulfilled the expectations of his friends, so that his after course more than corresponded with the promise of his youth. At the age of *two years* he could read fluently, and showed signs of an extraordinary memory. Very soon after this, in the intervals of his attendance at a village school at Minehead, he committed to memory a number of English verses, and by the time he was four years old he had learned by heart a variety of English authors, and even different Latin poems, which he could recite from beginning to end, though unacquainted with the language. Before he was six years old he was sent to a school kept by a dissenting minister at Bristol. Here the mediocrity of his master proved no barrier to his progress, for he became essentially his own instructor, and had generally studied the last pages of his books before he had reached the middle under the eye of the teacher.

When he was eight years old he attracted the attention of a land-surveyor of merit, residing near his father's house, and was allowed to spend as much time as he liked during the holydays, in the office of that gentleman, where he was indulged with the use of mathematical and philosophical instruments, and the perusal of three volumes of a *Dictionary of Arts and Sciences*. These were to him sources of instruction and delight, of which he never seemed to be weary. At this time he acquired some knowledge of land-surveying, and amused himself in his walks by measuring heights with a quadrant.

From the age of nine to his fourteenth year Young lived with a Mr. Thomson, at Compton, in Dorsetshire, where he was occupied, in common with the other boarders, with a close attention to Greek and Latin. He was always at the head of his class, and yet at the same time he made some progress in French, Italian, Hebrew, Persian, and Arabic. The French and Italian he learned in order to satisfy the curiosity of a companion, who had in his possession several works printed at Paris, of which he wished to know the contents; the Hebrew to read the Bible in the original; the Persian and Arabic with a view of deciding this question, raised during a conversation at dinner,—"Are the differences between the Oriental languages as marked as between those of Europe?" Without the certainty that we gather our information from authentic sources we should hesitate to add, that at the time when he was making this extraordinary progress in languages, he entered so ardently on the study of botany that in order to examine plants he set about the construction of a microscope, without any other guide than the descriptions given by Benjamin Martin. In order to succeed in his difficult task he found it necessary to acquire much dexterity in the art of turning, and falling upon a demonstration in Martin's *Philosophy*, which exhibited some fluxional symbols, he was not satisfied until he had read and mastered a short introduction to the doctrine of fluxions.

Such incessant activity had the effect which might have been expected, and at fourteen years the health of Young was greatly changed. He was attacked by symptoms of what his friends feared to be incipient consumption,—symptoms which happily yielded, after a time, to the prescriptions of art and the extreme care of his parents. During his indisposition he merely relieved his attention by what to him stood in the place of repose—a course of Greek reading in such authors as amused the weariness of his confinement. In the year 1787 he became the fellow-pupil of the grandson of Mr. David Barclay, of Youngsbury, in Hertforshire, it having been agreed that the two youths should pursue their studies together, under a private tutor, at Mr. Barclay's house. As a proof of his proficiency at this period we may give the following anecdote. On the day of his arrival at Youngsbury Mr. Barclay gave him some sentences to copy, to ascertain if he wrote a good hand. Young, perhaps a little humbled at such a proof being required, asked permission to retire into an adjoining room. He remained longer than appeared necessary, and Mr. Barclay began to joke about the young quaker's want of dexterity; but he presently returned with a remarkably beautiful copy, and a translation of the sentences into nine different languages.

According to the Memoir we principally follow, the tutor did not arrive, and Young took it on himself not only to direct the studies of his companion, but of another student, who now joined them, Mr. Hodgkin, author of the *Calligraphia Græca*. But M. Arago gives us a different account. He says, the preceptor who directed the studies of the two young scholars at Youngsbury was a distinguished young man, then engaged in perfecting himself in a knowledge of the ancient languages, and was afterwards the author of the *Calligraphia Græca*. He was not long, however, in perceiving the superiority of one of the two pupils, and observed with the most laudable modesty, that in their common studies, the true *tutor* was not always he who bore the title.

Thus passed the five years from 1787 to 1792, the summers being spent in Hertfordshire, and the winters in London. The little party of students had the advantage of occasional masters, during their annual visits to the metropolis, and with this aid Young made himself surprisingly familiar with the great writers of antiquity, keeping ample notes of his studies. He had now acquired facility in writing Latin, composed Greek verses, which were well received by the distinguished scholars of the day, and applied himself assiduously to the higher mathematics. To the studies of botany, zoology, and especially entomology, he at the same time paid considerable attention. He drew up from original sources a detailed analysis of the numerous systems of philosophy

which were professed in the different schools of Greece. The train of thought excited by the study of the conflicting opinions of the ancients is supposed to have mitigated in some degree Young's attachment to the views of his own sect, the quakers, from whose society he subsequently separated himself, during his residence in Edinburgh. In the course of his visits to London he attended the chemical lectures of Dr. Higgins, and having previously prepared himself by reading on the subject, he began to make simple experiments of his own. But he was never fond of repeating experiments, nor even of originating new ones, considering that, however necessary to the advancement of science, they demanded a great sacrifice of time, and that when the fact was once established, that time was better employed in considering the purposes to which it might be applied, or the principles which it might tend to elucidate.

Dr. Brocklesby, the maternal uncle of Young, being justly proud of the success of the young scholar, communicated some of his compositions to philosophers and literary men, and thus introduced him to the notice of Burke, Windham, and other celebrated characters. By means of their patronage, Young might easily have secured some lucrative post under government, but he preferred the independent though laborious career of a literary life. By the advice of his uncle, he directed his views to the studies necessary for the practice of physic. These studies were commenced in London under Baillie and Cruickshank, and continued at Edinburgh, where Doctors Black, Baillie, and Munro, were then highly distinguished. Young took his degree at Göttingen in 1795.

The biographer of Young justly remarks that his self-conducted education in privacy, was not without its disadvantages: that though the acquirements he made during those five years of seclusion were great, he was not gaining that which is acquired insensibly in the conflict of equals in the commerce of the world,—the facility of communicating knowledge in the form that shall be most immediately comprehended by others, and the tact in putting it forth that shall render its value immediately appreciated.

Before taking his degree, Young had become known to the scientific world by a controversy which he had carried on with Dr. Beddoes on Crawford's Theory of Heat;—by a Memoir concerning the habits of spiders; and by an observation relating to Gum *Labdanum*. He also communicated to the Royal Society his Observations on Vision, and his Theory of the Muscularity of the Crystalline lens of the Eye, which became the subject of much discussion, John Hunter laying claim to having previously made the discovery. He was soon after elected a fellow of the Royal Society.

In the intervals of more serious pursuits he found leisure for cultivating those arts in which his early education had left him deficient. Everything was with him a science, and whatever he followed he followed scientifically. He cultivated skill in bodily exercises, took lessons in horsemanship, in which he always had great pleasure, and practised under various masters, all sorts of feats of personal agility. The first time he mounted a horse, the riding-master who accompaned him leaped over an elevated barrier; Young wished to follow him, but was thrown over the horse's head ten feet. He got up without saying a word—made a second trial—was again dismounted, but did not pass this time over the head of the animal. On the third trial the young student succeeded in accomplishing what had been done before him. Both at Edinburgh, and at Göttingen he carried these kinds of exercises much farther than might have been expected. He even vied successfully with a distinguished rope-dancer, and acquired extraordinary facility in the art of vaulting on a horse. Thus we find a striking contrast between Newton, riding in a carriage with his arms extended and grasping the coach doors, from the fear of falling; and his illustrious competitor, who would gallop erect upon two horses, with all the assurance of a riding-master.

While at Göttingen, he excited the wonder of his fellow-students by his attainments and almost incredible industry. He had acquired at an early period a profound knowledge of the theory of music. His taste for painting was confirmed during his residence in Germany There his attention was entirely taken up with the collection at Dresden. He studied the defects and peculiarities of the greatest matters, their frequent changes of style, the material objects of their work, and the modifications which the objects and colours underwent in the lapse of time. He is said to have studied painting in Saxony in the same manner as he had studied the languages in his own country, and as latterly he cultivated the sciences. In fact, everything in the sight of Young appeared worthy of meditation and research. His college acquaintances relate that having entered his room during the day that he had received his first lesson in dancing a minuet, they found him busy, with a rule and compass, measuring the intersecting directions which the two dancers followed, and the different improvements which the various figures appeared susceptible of acquiring.

During his residence in Germany he composed a treatise entitled *De Corporis Humani Viribus Conservatricibus*, leaving few volumes unconsulted which had any connexion with his subject. He also gained a very general and accurate acquaintance with the language and literature of Germany, which he kept up throughout his life; he remarked that he found in Germany a love of new inventions, singularly and somewhat pedantically combined with the habit of systematizing old ones, and of giving an importance to things in themselves trifling, which in his case rather confirmed an original habit of dwelling on minutiæ more than his subsequent experience led him to think was advantageous.

THE Russian is scarcely ever seen to strike the animal over which he has power—his horse is seldom propelled by any other influence than a few cheering and encouraging sounds, and if this increases not his pace, he does not, heated with savage fury, dissect the savage beast with a scourge, beat out an eye, or tear out his tongue. The Russian proverb is, "It is not the horse, but the oats, that carry you." As long as the horse will eat, he feeds him; and his appearance generally honours the humanity of his master.

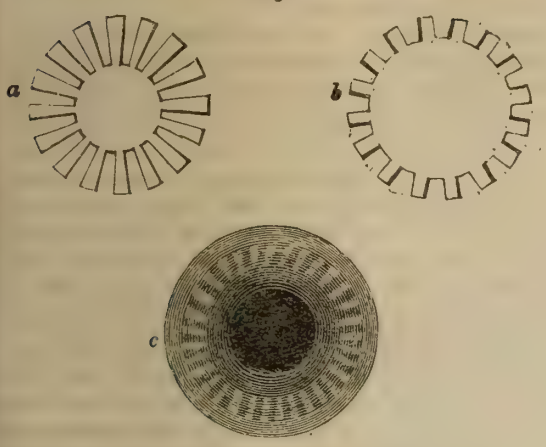
PERDIDI DIEM.

"I HAVE lost a day," said Titus, "for this day
To none have I done good." Oh! rather say,
The day this noble sentiment had birth
Shines out transcendent with enduring worth.
Small the *material* good thou could'st achieve,—
Transient and limited; but Time shall leave
These words a living lesson, potent still
To sway tow'rds generous deeds the human will,
When he hath stript of power Imperial Rome,
And crumbled into dust her proudest dome.—H. W.

THE results of deep research or extravagant speculation seldom provoke hostility, when meekly announced as the deductions of reason, or the convictions of conscience. As the dreams of a recluse or an enthusiast, they may excite pity or call forth contempt; but, like seeds quietly cast into the earth, they will rot and germinate according to the vitality with which they are endowed. But, if new and startling opinions are thrown in the face of the community—if they are uttered in triumph or in insult—in contempt of public opinion, or in derision of cherished errors they lose the comeliness of truth in the rancour of their propagation; and they are like the seed scattered in a hurricane, which only irritates and blinds the husbandman.—SIR DAVID BREWSTER

OPTICAL ILLUSIONS. VI.

Fig. 1.

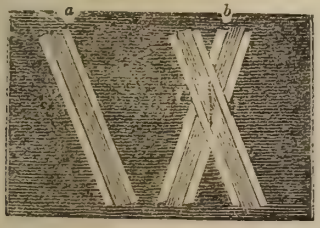


In our last paper on this subject we described several remarkable experiments made by Dr. Faraday, as well as the apparatus which he contrived for conducting them. We now proceed to speak of other experiments, made by the same gentleman.

It will be remembered that in the experiment described at the end of the last paper, two wheels having an equal number of teeth or cogs, but one having the teeth deeper than the other, gave, when viewed in the revolving apparatus, a spectral wheel with double the number of teeth. This is shown by the annexed figure, (fig. 1,) in which *a* is the wheel nearest to the eye, and having the deepest teeth, *b* the other wheel, having, like the other, sixteen teeth, and *c* the spectral wheel, with thirty-two teeth. It would be tedious to follow out the cause of each variety of effect produced in this experiment, but it may suffice generally to say, that they all result from the occurrence of one set of impressions on the retina before a previous set of impressions has lost its influence.

Dr. Faraday describes a very simple experiment, to show the production of a spectral line, where none such exists in the original objects. If a little rod of white cardboard, five or six inches long, and one thirtieth of an inch wide, be moved to and fro, from right to left, before the eye, an obscure or black ground being beyond, it will appear to spread a tint over the space through which it moves, as in fig. 2, *a*. A similar rod held and

Fig. 2



moved in the other hand will produce the same effect, but if there be visually superposed, *i. e.*, if one be moved to and fro behind the other, also moving, then in the quadrangular space included within the intersection of the two tints will be seen a black line, sometimes straight, and connecting the opposite angles of the quadrangle, as in fig. 2, *b*, at other times oval or round, or even square, according to the motions given to the two cardboard rods. This appearance is visible even when the rods are several inches or a foot apart, provided they are visually superposed. By carefully examining the effects produced, and tracing them to their causes, it will be seen that the black line is the path of the intersecting point of the moving rods. As their motions vary, so does the course of this point change, and wherever it occurs there is less eclipse of the black ground beyond than in the other parts, and consequently less light from that spot to the eye than from the other portions of the compound spectrum produced by the moving rods.

In the experiment just described the eye should be fixed, and the part observed should be between the planes in which the rods are moved. Those who find it difficult to observe the effect at first will instantly be able to do so if the rod nearest the eye be black, or held so as to throw a deep shade: the line is then much more distant. Two bright pins or needles produce the effect very well in diffuse day-light, and the line produced by the shadow of one on the other and that belonging to the intersection are easily distinguished and separated. If, while a single bar is moved in one hand, several bars or a grating is moved in the other, then spectral lines, equal to the number of bars in the grating, are produced. If one grating is moved before another, then the lines are proportionably numerous; or, if the distances are equal, and the velocity the same, so that many spectral lines may coincide in one, that one is so much the more strongly marked. If the bars used be serpentine or curved, the lines produced may be either straight or curved at pleasure, according as the positions and motions are arranged, so as to make the intersecting point travel, in a straight, or a curved, or in any other line.

Dr. Faraday shows that the production of a line in this experiment, where none exists in the original objects, depends on the same cause as the production of a spectral wheel, with twice as many teeth as either of the real wheels, in the experiments with the revolving machine; and to show more clearly the nature of this effect he varied the experiments in several different ways.

1. When wheels were used, having equal but oblique teeth, and the obliquity in the same direction, the spectrum was also marked obliquely, but when the obliquity was in opposite directions the spectrum was marked as with straight teeth.

2. When equal wheels were revolved with opposite motions, one rather faster than the other, the spectrum travelled slowly in the direction of the fastest wheel: when the difference in the velocity of the two wheels was made greater the spectrum travelled faster.

3. When one wheel contained more cogs than the other, as, for instance, twenty-four and twenty-two, then with equal motions the spectrum was clear and distinct, but travelled in the direction of the wheel having the greatest number of teeth. When the other wheel was made to move so much faster as to bring an equal number of cogs before the eye, in the same time as the other, the spectrum became stationary again.

4. When the motion of the wheels upon the machine is in the same direction, the velocities equal, and the eye placed in the prolongation of the axis of the wheels, no particular effect takes place. If it so happens that the cogs of one coincide with those of the other, the uniform tint belonging to one wheel only is produced. If they project by the side of each other, it is as if the cogs were larger, and the tint is therefore stronger. But when the velocities vary, the appearances are very curious: the spectrum then becomes altogether alternately light and dark, and the alternations succeed each other more rapidly as the velocities differ more from each other.

5. When wheels with radii, instead of cogs or teeth, are put upon the machine, the carriage-wheel phenomenon is observed with great perfection. They should be viewed obliquely, so as to be visually superposed only in part: and provided the wheels are alike, and both revolving in the same direction with equal velocity, they immediately assume the curved form described in the last paper.

6. If the wheels revolve in opposite directions, then

the spectral lines, originating at each axis as a pole, have another disposition.

7. The carriage-wheel experiment may be further imitated, by mounting the revolving machine with a single wheel carrying several equal radii at equal distances, and holding a small grating between the wheel and the eye. The bars of the grating should be equidistant, the intervals between them being about equal to that between the extremities of two contiguous spokes of the wheel.

As a variation in the mode of observing many of these phenomena Dr. Faraday recommends the following: to cast the shadows of the revolving wheels, either by sun or by candle-light, upon a screen, and observe their appearance. The way in which the cogs or radii of the wheels shut out more or less of a back-ground from the eye will enable them, to an equal degree, to intercept light which would otherwise fall upon a screen. When the two equal cog-wheels are revolved, so as to have the shadows cast upon a white screen, that shadow exhibits all the appearances and variations observed when the eye is looking by the wheels in shade at a white back-ground. The shadow is light where the wheels appear dark, for there the light has passed by the cogs,—and dark where the wheels appear light, for there the cogs have intercepted most of the rays. The screen should be near to the wheels, that the shadow may be sharp, and it is convenient to have one wheel of rather smaller radius than the other, or else to place them obliquely to the sun, for the purpose of distinguishing the shadow of each wheel, and showing how beautifully the spectrum breaks out where they superpose. When the spoke-wheels are revolved they also cast a shadow, presenting either the appearance of fixed or moving radii, according to the circumstances already alluded to.

The same ingenious philosopher also shows that *reflection* will produce a similar train of beautiful effects. If a white cardboard wheel, with equal radii, be fixed upon a pin, and rotated between the fingers before a glass, so that the wheel and its reflected image may visually superpose in part, the fixed hues will be seen passing in curves between the axis of the wheel and the reflected image. If the person gradually recede from the glass, but still look through the wheel in his hand at the reflected image, *i. e.*, still retain them superposed, which is best done by bringing the revolving wheel close to the eye, he will see the lines or radii of the reflected image gradually become straight, and when from three feet to any greater distance from the glass, will see the spectrum of the reflected image, having as many dark radii upon it as there are radii in the wheel he is revolving. Whatever the velocity, or however irregular the motion of the wheel, these lines are perfectly stationary. A very striking deception may be obtained in this way, by revolving a single cog-wheel between the fingers before the glass, when from twelve to eighteen feet from it. It is easy to revolve the wheel before the face, so that the eyes may see the glass through or between the cogs, and then the reflected image appears as if it were the image of a cog-wheel, having the same number of cogs, but perfectly still, and every cog distinct, instead of being the image of one in such rapid motion that by direct vision the cogs cannot be distinguished from each other, or their existence ascertained. The effect is very striking at night if a candle be placed just before the face, and near to it, but shaded by the wheel: in the reflection the wheel is then well illuminated, and the reflected face or shadow forms a good back-ground against which to observe the effect. When we come to speak of M. Plateau's experiments it will be seen that this gentleman made much use of a mirror apparatus for such experiments as these.

Another experiment, beautiful from its very simplicity, was described by Dr. Faraday. A disk of cardboard, about two inches and a half in diameter, was cut into a wheel like fig. 3; another disk, rather larger, was cut into a similar wheel, and then the radii of one were twisted obliquely like thewings of a ventilator, and the radii of the other similarly twisted, but in the opposite direction. A small hole being made in the centre of each, a large pin was passed through that of the smaller wheel, and then a small piece of cork passed on to the pin, to hold the wheel near the head, but free to turn. Two or three beads were then added, the second wheel put on, and then a second piece of cork. The end of the pin was then stuck into a quill or a pencil, and thus was formed an apparatus very like a child's windmill, except that it had two sets of vanes, revolving in opposite directions. On walking across a room towards a window or a candle, with this little toy in the hand, or blowing at it slightly from the mouth, the lines were beautifully seen, being either stationary or moving, according to the relative velocity of the two wheels. This could be altered at pleasure by inclining the vanes more or less, or by blowing towards the centre of the wheels, or towards the edges. when the larger hind wheel received more propulsive force.

Fig. 3.

The more the truths of science are studied, the more evident does it appear that those truths may often be illustrated and experimented on by very simple and cheap apparatus; and these experiments by Dr. Faraday, on the curious and often pleasing illusion under which the evidence of the eye is placed, exemplify this in a prominent manner. We shall shortly resume the subject, by detailing the results of experiments made by other ingenious philosophers.

BUFFALO DANCE OF THE AMERICAN INDIANS.

We observed, coming from the village, a group of Indians, fantastically dressed in buffalo skins, so as to bear a strong resemblance to that beast. They retained the head, beard, and legs of the animal entire, and were so well disguised that several of them, at a little distance, might have been mistaken for the brute itself. They had prepared themselves to give us the buffalo dance. They drew up in a large circle, at a little distance from a skin tent which had been lent to us by them, our own marquee having become much tattered in a heavy gale a few nights previous. The leader of this band was the Big Kaw, who frisked behind the grave head and beard of an enormous buffalo bull. In the centre of the circle were seated a number of buffaloes, whose business it was to sing, while the rest, consisting of chiefs, squaws, and pappooses, or in other words, of bulls, cows, and calves, danced to their music. The chorus commenced with a low, monrnful ditty, which set the whole herd of dancers in motion. They began by moving slowly round the singers, but as the chant grew more and more animated the vivacity of the herd increased. From a walk they quickened their pace to a trot; from a trot it ambled off into a full gallop. Now the spirit of the beast began to show out. The cows bellowed; the bulls frisked, roared, and fought; they kicked up, they tore up the ground, and chased each other round the circle. This lasted some time, until they grew uproarious, and the butting of horns was furious. At this sight the cows drew off, and several calves, after bursting out into a loud bawl, raised up from all fours, and mounting upon their two hind feet, started off for the village—too much frightened to take any further share in the day's diversions. The dance lasted for about two hours after which the Big Kaw, under the form of a seven-year, old bull, came and seated himself upon a billet of wood, at our sides. He appeared perfectly satisfied with his performance, but was grievously out of wind.

After this followed several other dances of a similar character. They received their appellations from different animals, and the merit of a dance consisted in imitating, as nearly as possible the actions of the beast from which it received its name. They continued until late in the afternoon, when the Indians, one after another, departed to their homes; and long before nine o'clock the busy hum was entirely stilled, and a deep silence hung over our tent, and the surrounding prairie.—*Indian Sketches.*

CHINA. XIII.

ISLAND OF CHUSAN.—APPEARANCE OF THE COUNTRY.—RESPECT FOR THE DEAD.—JOS-HOUSES.—BUDHISTS.—MANDARINS

WE recently presented our readers with some account of Tinghai, or Tinghai-een, a city in the island of Chusan, for which we were indebted to the interesting narrative of Lord Jocelyn: we again avail ourselves of the information he has furnished of what he witnessed in other parts of the island.

A native compradore, (purveyor,) who had been of essential use to our troops in procuring supplies of cattle, and in assisting as an interpreter in default of a better, was, while foraging, seized by mandarin soldiers, and carried away pig-fashion, upon a pole. Two or three small parties were ordered to traverse the island in pursuit of him, one of which was accompanied by our author. He thus describes the scenery of the interior:—

The road, or rather path, was flagged with large square blocks of stone, of sufficient breadth to allow three persons to walk abreast. Through this town, and indeed over the whole island, the roads were of the same description; and from what we have since seen of the tracts of the main land, they appear all on the same model, and of the same breadth. After traversing for some miles a luxuriant sea of paddy-fields, the way wound up the side of the mountains, through a lonely pass: the path here was cut into easy flights of steps, and these passages, which were numerous through the whole island, were all formed in the same manner. The surrounding hills were covered with the tea-plant, cotton, dwarf-oak, and a species of arbutus, rich with its red fruit; whilst their lofty summits towered on high, clad in the bright green pasture. The long valleys seen from the ascent stretched from the mouths of the different ravines, some lost in the many windings in the hills, whilst others again swept down to the sea-shore, laden with their luxuriant crops of rice, bending to the morning breeze; and far away over the curious buildings of Tinghai, the British fleet lay anchored on the sleeping water. Here and there, as if dropped at random upon the sides of the hills, were clumps of fine trees; and, peeping through their thick foliage, the roofs of houses and temples diversified the scene. Amongst many of the beautiful groves of trees which here invite the wanderer to repose, spots are selected as the resting-places of mortality: and gazing on these tranquil scenes, where the sweet clematis and fragrant flowers help to decorate the last home of man, the most careless eye cannot fail to mark the beauties of the grave.

It is still a matter of doubt whether the Chinese do not carry their veneration of the dead to the point of adoration; and some centuries ago, the Jesuits, the first missionary labourers in this country, finding it impossible to freeze up the warm affections felt upon this point, turned them into their own channel by inculcating the prayers for the dead upon their proselytes.

The natives of this island do not inter their dead as in the southern provinces; but the corpse is placed upon the ground in a wooden coffin, covered with a lid, easily removed, highly polished, round which the wild flowers and creepers blossom. In most of the houses we entered in the island, these large boxes were the first article that met the eye in the entrance chamber. In the tenanted graves which curiosity induced us to open, the body appeared dressed as in life, the pipe and tobacco lay on the breast, and leaves and rice at the unconscious head.

While the men stopped to breakfast in a temple, we walked on to some of the neighbouring houses. They were all deserted except one, which appeared to belong to the head man of the district; it was buried in a grove of palm and citron trees, and other shrubs unknown to us, and surrounded by a garden where the Cape jessamine and other sweet flowers perfumed the neighbourhood. The building was a good specimen of their country dwellings: on entering through a large wooden gateway we found a yard or court, surrounded on two sides by different out-houses serving as granaries and places to dry fruit, whilst the remaining sides were the apartments of the family and the Hall of Ancestors, a room used in common by all the members of the household. The reason of the large size of these farm-houses is obvious, when it is taken into consideration that they generally contain a father, mother, sons, their wives and children. The front of the Hall of Ancestors was prettily trellised over, and rested on pillars, dry-rubbed and carved; the interior of this large room was surrounded by matted sofas; and little tables stood in the centre, on which were placed the tea-cups and pipes. Under the projecting roof was seated a venerable man, with a long white beard betokening him to be a grandfather, for they never permit its growth until that period. The rest appeared to have fled; and he looked so lonely and desolate, with the tears streaming down his withered face, that, although we were convinced that the compradore had been taken in the neighbourhood of the village, we could not find it in our hearts to capture this patriarch, although he proved to be the elder of the district, and acknowledged having heard the people carrying off the man the previous morning. The heat was intense, and as the men kept continually falling out from its effects, we determined to surround a village and procure coolies to carry the packs and to act as guides.

Having seized a sufficient number for our purpose, we held a parley with a small party that had taken up a position in a neighbouring temple, telling them that our intentions were amicable, and that we required the services of the men we had taken, but would repay them for their labour. During the conversation two little children stole out of one of the houses, and although they were at first terrified by the strangers, I succeeded in tempting one, a very pretty child, to play with a gay cap I wore on my head. A few quarter-dollars soon made us good friends; and the people, seeing we were not the bloody-minded barbarians they expected, became as troublesome from their curiosity and familiarity as they had formerly been coy. No part of our dress was left untouched, and our hands were examined, by which they appeared to judge of our situations in life.

Our halting-places were generally in the temples, and the village supplied us with provisions. The Chinese, as far as these jos-houses are concerned, show very little respect for their religion. Amongst themselves they put them to the same purpose as we did for our troops, and mandarins and travellers of all descriptions use them as caravansaries on their journeys; the mandarins, indeed, if their rank is superior to the jos's as a god, place the latter outside the building during their sojourn.

On the third evening we reached a small town buried in a thick wood, the entrance to which was over a curious bridge, formed, like most of those in Tinghai, of three blocks of stone, or rather slabs, the centre piece lying parallel to the water, whilst the one on each side slants upwards from the bank, resting at one end on the land, and at the other dovetailed into the centre stone. These are often seen fourteen feet long by four or five in breadth; how they manage to place them in the position seems extraordinary, as no machinery for the purpose has been found, and they say it is done merely by manual labour.

The party failed in their endeavours to recover the man of whom they were in search, but took some of the principal inhabitants prisoners, to be held as hostages for his safety. The men had suffered severely from ague and dysentery in their march, but arriving at a sea-port found a steamer to take them back to Tinghai.

In the passage we passed by Poutoo, a small island within musket-shot of Chusan: this is a curious spot, not only from its natural beauties; which are very great

and thought by those who had been at Canton to resemble it, with its rocky stairs, winding along the sides of the hills, clothed with citron and other trees, but also on account of its being the Mecca of the Chinese religion, to which the worshippers of Budh make frequent pilgrimages, somewhat in the style of the Mussulman Hadji. It possesses a large temple, or rather a number of temples, buried in the rocks and jungle; more curious and picturesque, however, from their situation, than from any great magnificence in the structure. Attached to it is a monastery, containing some fifty priests, who seemed proud of their possession, and anxious that visitors should admire it. The old father of this monastery was upwards of eighty years of age: they all complained of a great scarcity of food, as their livelihood consists in the offerings to the gods presented by the worshippers to the temple; and these, during the late troubles, had been differently employed. It was agreed at the time that something should be done to endeavour to minister to their relief, but some weeks afterwards, other parties of military visiting the same place, found that starvation had driven many from their hold, and the poor father was fast travelling to his long home from the want of the necessaries of life.

Our author sailed with the expedition to the mouth of the Peiho, and here landed with Captain Elliot, who had been invited to an interview with the commissioner, Kea'shen. Two miles from the town they were met, agreeably to the etiquette towards visitors of rank, by a mandarin junk, on board of which were two officers, one with the red button in his cap, who was the general of the emperor's Tartar body-guard, and the other, a blue-button mandarin, holding some rank in Kea'shen's household.

They entered our boat, says our author, and handed round their agate snuff bottles, and soon became quite familiar. Blue-button was particularly communicative, asking our names and different professions, and informing us of his own military deeds; and in a private communication he acknowledged that in "the secret chamber" he sometimes indulged in the opium pipe. Red-button, however, who seemed of a more morose disposition, frequently called him to order, as if he feared some disclosures from his talkative propensities.

At the landing-place a bridge of boats had been constructed for our use across the mud-flat; and a narrow pathway, leading some hundred yards from the shore, brought us to an encampment, which had been thrown up for the reception of the mission.

A blue screen was placed at the entrance, so as to hide the interior from the gaze of the public; and here we were met by many more mandarins, and marshalled into the presence of Kea'shen; he rose at our entrance, and received the mission with great courtesy and civility. Indeed, the manners of these high mandarins would have done honour to any courtier in the most polished court in Europe. He begged us to remain covered, and was introduced to each person separately, and expressed his hopes that the supplies had been received by the squadron. He made some excuse for our reception in the tents, but intimated that Tarkou was some distance from the landing place. Judging from appearance, he might have been a man of forty, and looked, what he is said to be by his countrymen, a person of great ability: his tail, the Chinese appendage to men of all ranks, except priests, was remarkable for its length and the care that was evidently bestowed upon it. He was dressed in a blue silk robe, with a worked girdle: on his legs were the white satin boots common to all the higher orders: his head was covered with a mandarin summer cap, made of fine straw: in it was placed the deep red coral button, denoting the rank of the wearer, and the peacock's feather, drooping between the shoulders. On the whole, his dress was plain, but the mandarins when in full costume, judging from specimens taken at Chusan, must have a very gorgeous appearance.

The encampment was surrounded by a high canvass wall, resembling that which encircles the private apartments of great men and native rajahs, when travelling in India. Inside this screen were eight small tents, in each of which a table and forms were placed. These formed an oval, and in the centre was erected a canvass cottage, of rather an ingenious description, whilst at the upper end, concealed by another screen, stood the tent of conference. This was lined with yellow silk (the royal colour) and worked with the arms of the empire at the back.

The interpreters and Captain Elliot remained with the commission, whilst the rest of the officers and gentlemen sought the tents around, in which the lower order of mandarins were busy preparing a breakfast for the party; for it was an extraordinary thing in this visit, that everything was apparently done by mandarins—none of their servants being admitted.

The meal consisted of numerous little plates, piled one upon the top of the other, containing birds'-nest soups, sea-slugs, sharks' fins, hard-boiled eggs, whose interiors were far advanced to chickenhood, and dressed fish: these were the greatest delicacies. This is but a small portion of the supply, for at the table where I had the honcur to partake of the *good fare* there were no less than thirty of these little saucers. These breakfasts were spread in the different tents, and each was intended to stay the ravenous appetites of five barbarians.

Some time afterwards, when the expedition had sailed further south, some mandarins came off to the ship and breakfasted with the admiral. It was surprising to see the enormous quantity of food they devoured; and one who was of an immense size, weighing upwards of thirty stone, upon being questioned as to his powers of consumption, acknowledged, with a degree of vanity, that a sheep was his ordinary allowance for three days, nor did he seem at all satisfied with his morning meal. The Chinese, like the natives of India esteem size and bulk, as they imagine such an exterior a sign of wealth and power, and respect it accordingly.

We were much struck at the immense bodily strength and power of the northern Chinese, particularly of the men who were employed tracking the boats upon the river, who, although seemingly a wretched class, more like beasts of burden than human beings, are possessed of such physical powers that six or eight of them will drag against the stream, and with apparent ease, a boat of considerable tonnage.

A full account of those singular people, the Chinese boat-trackers, has already been given in our sixth article on the *Manners and Customs of the Chinese*, Vol. X., p. 82.

A friend of mine, while shooting wild-fowl with his brother, was attended by a sagacious Newfoundland dog: in getting near some reeds by the side of a river, they threw down their hats, and crept to the side of the water, where they fired. They soon afterwards sent the dog for their hats, one of which was smaller than the other. After several attempts to bring them both together in his mouth, the dog at last placed the smaller hat in the larger one, pressed it down with his foot, and then brought them both together. This fact need not be doubted. These individuals have both at different times assured me of its truth. I know an instance somewhat similar. A spaniel was endeavouring to bring a dead hare to his master. After several ineffectual efforts to carry it in his mouth, or to drag it along, he contrived to get all the feet of the hare in his mouth, and in this way conveyed it to his master.—Jesse.

LONDON:
JOHN WILLIAM PARKER, WEST STRAND.
Published in Weekly Numbers, One price Penny, and in Monthly Parts, price Sixpence.
Sold by all Booksellers and Newsvenders in the Kingdom.

THE

Saturday Magazine.

No. 596. OCTOBER 16TH, 1841. { PRICE ONE PENNY.

THE BANKS OF THE THAMES. VIII

HAMPTON COURT.

Let any wight, (if such a wight there be,)
To whom thy lofty towers unknown remain,
Direct his steps, fair Hampton Court, to thee,
And view thy splendid halls: then turn again
To visit each proud dome by science praised,
"For kings the rest," (he'd say,) "but thou for gods wert raised."

J. P. ANDREWS, *after* GROTIUS.

CARDINAL WOLSEY, like many other ambitious men, hastened his own downfall by making too obtrusive a show of the power and wealth which his ambition had acquired for him. York Place, (since known as Whitehall,) and Hampton Court Palace, were instances of this uncontrolled love of splendour. Both belonged to the Cardinal, both were fitted up with almost unprecedented splendour, and both passed from the hands of this miscalculating man to those of the wily monarch from whom he had obtained all his power and wealth.

Soon after the Cardinal came into possession of Hampton Court Palace, it is said that he fitted up no less than two hundred and eighty silken beds, with suitable hangings, for the accommodation of visitors. In 1526 Wolsey thought it expedient to present the palace to Henry the Eighth; and that monarch resided in it occasionally, especially towards the end of his reign. Edward the Sixth was born in the palace; and the subsequent sovereigns, Mary and Elizabeth, frequently visited it. At the commencement of the reign of James the First the conference was held at Hampton Court, from which resulted the new translation of the Bible, and certain alterations in the Litany. Charles the First occasionally resided at Hampton, but rather as a prisoner than as a free monarch. Cromwell made it one of his residences, and the scene of his daughter Elizabeth's marriage with Lord Falconberg. Charles the Second, and James the Second, passed a portion of their time in the palace; and William rebuilt the state apartments and some other parts of the edifice. From that time the palace has not been occupied as a royal residence, except for a short time by the Prince of Orange, to whom the use of it was granted in 1795 as an asylum, after he had been compelled to quit his own dominions. The principal domestic parts of Hampton Court are now occupied by different private families, on whom grants for life have been conferred by the Crown.

It appears probable that the original plan of Hampton Court Palace comprised five open courts or quadrangles, all surrounded by buildings; but after the alterations which it has since undergone, it is now composed of but three. The approach to the house is from the west, which side contains ranges of subordinate apartments and offices; the entrance to these is by a plain gateway, and at each extremity of the west front is an octangular brick turret. Within this outer portal is the first court, about a hundred and seventy feet by a hundred and forty, surrounded on all four sides by buildings of more or less elegance; among which is the west end of the Great Hall, presenting, with its large rich window, the impressive resemblance of a venerable chapel. The passage to the middle quadrangle is by a groined archway, finely ornamented. This court, which is somewhat smaller than the outer one, is bounded on the west by a range of buildings in which is the reverse front of the portal leading from the first court; on the east by another range in which is a fine oriel window, and a very rich portal flanked by turrets; on the south by a colonnade

of the Ionic order, designed by Sir Christopher Wren, but scarcely harmonising with the rest of the building; and the north by the Great Hall, one end of which is seen in the outer court.

The Great Hall is more than a hundred feet long, by forty wide, with an elegant gable window at each end. The sides are lighted by seven lofty windows, placed at a considerable height from the ground, as was customary in old halls, to afford space for the tapestried hangings beneath. At the upper end of the Hall is a dais or platform, and on one side of it a window of most exquisite workmanship, on one pane of which the Earl of Surrey wrote, with a diamond, some lines to the "fair Geraldine." The roofing of the Hall, which is of oak, is open-worked, and so exquisitely carved as to produce a general splendour of effect that almost approaches to sublimity.

It is impossible to visit this Hall without carrying the imagination back to the time when Cardinal Wolsey held here his more than regal banquets. Mr. Jesse tells us, on the authority of the chroniclers of those days, that Wolsey's household consisted of one thousand persons, and that the arrangements of the palace were consistent with the due and even luxurious accommodation of this large number. In the Hall there were three boards or tables, presided over by three officers, one a steward (a priest,) another a treasurer, (a knight,) and the other a comptroller, (an esquire;) also a confessor, a doctor, three marshals, three ushers of the hall, and two almoners and grooms. The officers of the Hall kitchen, of the private kitchen, and of the state apartments, were so numerous, and classified in such an exact manner, that we cannot attempt to enumerate them; suffice it to say that all these were daily fed in the Hall; one table being for lords of the household, another for gentlemen, and others for the inferior degrees.

Cavendish, Stow, and the other chroniclers of past time, have dwelt with minute wonder on the magnificent entertaiments given by Wolsey in this Hall. One in particular, given to the French ambassadors sent over at the conclusion of a peace in 1528, was specially noted: the lord mayor entertained them in London; the king feasted them at Greenwich and at Richmond; but Wolsey's banquet at Hampton far exceeded the others. The rich hangings of arras, the massive silver and gold plate, the regiments of tall yeomen in gay liveries that waited upon the guests, the glare of the torches, the costliness and excellence of the wines, the savour of the meats, and the superabundance of everything, are all descanted on by Stowe with great minuteness. The Cardinal, we are told, did not enter the Hall till the end of the first course, (perhaps to show his importance,) but after he had welcomed the guests, and taken his seat, the banquet proceeded.

Anone came up the second course, with so many dishes, subtleties, and devices, above a hundred in number, which were of so goodly proportion and costlie, that I think the Frenchmen never saw the like. The wonder was no less than it was worthie indeed. There were castles, with images the same as in St. Paul's Church for the quantity, as well counterfeited as the painter should have painted it on a cloth or wall. There were beasts, birds, and personages, most lively-made and counterfeited, some fighting with swords, some with guns and cross-bowes, some vaulting and leaping, some dancing with ladies, some on horses in complete harnesse, jousting with long and sharp speares, with many more devices. Among all other was a chessboard, made of spiced plate, with men thereof the same; and for the good proportion, and because the Frenchmen be verie expert in that play, my Lord Cardinall gave the same to a gentleman of France, commanding there should be made a goodlie case for the preservation thereof in all haste, that he might convey the same into his country. Then took my lord a boule of gold filled with ippocrass, and putting off his cappe, said, "I drink to the king my soveraign lord, and next unto the king your master," and therewith drank a good draught. And when he had done, he desired the grand master to pledge him, cup and all, the which was well worth five hundred marks, and so caused all the lords to pledge these two royal princes. Then went the cups so merriely about, that many of the Frenchmen were fain to be led to their beds.

But we must leave the Hall and its festivities. The third quadrangle of which the palace consists, usually called, from the fountain in the area, the Fountain Court, consists chiefly of buildings constructed by Sir Christopher Wren in the reign of King William the Third, at the time when the south and east sides of the old palace were taken down, and the present state apartments in those divisions erected. The north and west sides were left standing, but were externally renovated to correspond with the new buildings. The court measures more than a hundred feet in each direction; and on each side is a beautiful colonnade of the Ionic order, with duplicated columns.

On the northern side of the Fountain Court is the Chapel. It is paved with black and white marble, and fitted up with oak, elaborately carved in many parts by the celebrated Gibbons. The roof is of a Gothic pattern, with elaborately-worked pendant ornaments. Before the civil war this chapel was ornamented with stained glass and pictures: but at that disturbed period, we are told that—

Sir Robert Harlow gave order (according to the ordinance of Parliament,) for the putting down and demolishing of the popish and superstitious pictures in Hampton Court, where the altar was taken down, and the table brought out into the body of the church, the rails pulled down, and the steps levelled, and the popish pictures and superstitious images that were in the glass windows were also demolished, and order given for the new-glazing of them with plain glass; and, among the rest, there was pulled down the picture of Christ nailed to the cross, which was placed right over the altar, and the pictures of Mary Magdalen and others, weeping by the foot of the Cross; and some other such idolatrous pictures were pulled down and demolished.

The east and south fronts of the palace, comprising the state apartments, form two extensive piles. The eastern, three hundred and thirty feet in length, is chiefly built of bright red bricks, but with decorations of stone; the central compartment, in which is the state entrance to the palace, is of stone, and highly embellished. The south front is about the same length as the eastern and has, like it, a central compartment of stone, but is not so highly embellished; it looks over the gardens; and the ground was here sunk ten feet, for the purpose of obtaining a view from the lower apartments. The numerous state apartments are of magnificent dimensions; and they, as well as other apartments in the palace, are splendidly fitted up, and adorned with pictures by the first masters.

The most valuable treasures of art in the palace are unquestionably the Cartoons of Raffaelle, which are known, at least by name, to most readers. They were drawings (cartoons) intended as copies for tapestry; and done by Raffaelle, rather more than three centuries ago. When they were sent to Arras, in order that tapestries might be worked from them, the weavers cut each of them perpendicularly into six or seven slips, in order to work more conveniently. The tapestries thus produced were admired and exhibited at Rome; while the inestimable patterns or cartoons lay in oblivion in a cellar at Arras for a whole century. At length Charles the First, at the suggestion of Rubens, sought them out; when it was found that several of them were torn to fragments or otherwise destroyed; there being only the slips of seven of them remaining in an entire state. Some years after this, William the Third caused seven stretching-frames to be made, secured the slips carefully in their respective places to form the original pictures, and built a room for their reception at Hampton Court Palace, where they still remain. Propositions have at some periods been made to remove them to London, where they could be

more seen and appreciated: but it is feared that the effect of the metropolitan atmosphere on the water-colours, in which they are painted, would be unfavourable, while the Cartoon Gallery is allowed to be well-adapted for their reception. The subjects of these cartoons are as follow:—1. The Death of Ananias. 2. Elymas the Sorcerer struck blind by St. Paul. 3. The Lame Man restored by Saint Peter and Saint Paul. 4. The Miraculous Draught of Fishes. 5. Saint Paul and Saint Barnabas at Lystra. 6. Saint Paul preaching at Athens. 7. The last charge to Peter. We may remark, that, on the sale of the collection formed by Charles the First, the cartoons were secured at the price of 300*l.* by Cromwell, whose known determination to possess them prevented competition; but not long afterwards he obtained a loan of 50,000*l.* on them from Holland, which sufficiently indicates the estimation in which they were held.

Of the very large collection of pictures by distinguished masters, contained in different apartments of the palace, we have not room here to speak; but we must give a passing notice of some singular tapestries in a room called Wolsey's withdrawing-room. This room is entered by a doorway from the centre of the dais in the Hall. It is about sixty feet long, thirty wide, and twenty high. The ceiling is decorated with pendent ornaments, between which are fleurs-de-lis, roses, portcullises, coats-of-arms, &c. The ribs are of oak, and were formerly elaborately painted and gilt; they are divided into compartments, and from them small pendants descend as at the intersections. Around the room are a series of tapestries worked by Flemish artists, and placed in their present position by Cardinal Wolsey. Of these tapestries Mr. Jesse remarks:—

With all their drawbacks, these tapestries possess qualities which the real artist and connoisseur will immediately recognise as worthy of study and attention. The vigour of some of the groups and single figures, the expression of many of the heads, the feeling for simple and often elegant form, and also the exceeding grace and beauty of disposition and arrangement of many of the draperies, to say nothing of the bold, though it must be admitted, often strange conception of the allegories—afford fair compensation for many defects which arise out of ignorance of, or want of practice in, true drawing, and the absence of a grander and purer style.

The pleasure grounds attached to the palace are laid out in the formal Dutch taste; and in a garden called the private garden is the celebrated grape-vine, a hundred and ten feet long. This vine was planted more than seventy years ago; and it has been known to yield in one season two thousand two hundred bunches of grapes weighing on an average one pound each. A park, nearly five miles in circumference, is situated near the river; and in it is a canal half a mile in length bordered with fine lime-trees. A labyrinth or maze, on the opposite side of the palace, is one of the objects which, taken in conjunction with the various other attractions of the place, make Hampton Court one of the pleasantest jaunts to the visitor which the "banks of the Thames" can afford. At this part of our noble river the scenery on both banks has always been celebrated for its beauty.

. . . . . Children we are all
Of one great Father, in whatever clime
Nature or chance hath cast the seeds of life,
All tongues, all colours: neither after death
Shall we be sorted into languages
And tints, white, black, and tawny, Greek and Goth,
Northmen, and offspring of hot Africa;
The All-Father, He in whom we live and move,
He, the indifferent Judge of all, regards
Nations, and hues, and dialects alike;
According to their works shall they be judged,
When even-handed Justice in the scale
Their good and evil weighs.—SOUTHEY.

THE ECONOMY OF MARINE LIFE.

APART from the local advantages to such people as those of the Channel Islands—who use it as fuel and as manure—of stranded sea-weed, there is a principle, connected with the fact of its coming ashore, which it is necessary to understand before one can examine the sea with due knowledge of the economy of that extraordinary element. It is a fact, palpable to any one's observation, that all the coasts of the land, composed of mineral substances, or of dead shells, or other animal productions, or vegetable ones in which life is extinct, are habitually wetted by the ocean waters, to the full extent that these waters act upon them. It is also a fact, well known to those acquainted with the economy of nature, but not so palpable to common observation in those who do not attend to the principle of things, that no living production of the sea, or any other water, is wetted by that water while it remains in the living state. This is known to be the case in all waters, however soft and limpid they may be, or however mixed with saline and other active substances; and it is also known that the more such substances exist in the composition of any water, whether of the sea or of any other collection, the more completely are the living inhabitants of that water, animal or vegetable, protected against its action upon the surface of their bodies. The substance which nature employs for this purpose is a mucous or slimy matter, of some description or other, in which the surface of the living being is habitually bathed, and by which it is completely protected from that macerating and decomposing influence, which the water, whether salt or fresh, would otherwise exert upon it, and in so far operate its destruction; in the same manner as water very speedily decomposes the greater number of organized substances after they are dead.

The most remarkable and important relation between the waters of the sea and the dead and living inhabitants of that element, is not, however, the circumstance of the living productions and inhabitants elaborating a mucous or slimy production, by which the wetting is prevented, and which applies not only to aquatic plants and animals covered with soft skins, but even to the most compact of the porcelain shells, which, when living, are invested with a kind of membrane, often of extreme tenuity, which possesses the same quality. The curious part of the matter is, the difference of their relation in the sea to a substance which can be wetted by its waters, and to one which cannot be so wetted. The wettable substance finds its way to the wettable shore by an obscure but by a very certain and constant kind of attraction; and the substance which the water of the sea cannot wet has no such tendency to come on shore, but remains to perform its functions in the water. No matter whether it is marine plant, marine animal of any kind whatsoever, or aquatic bird which frequents the waters without habitually living in their volume; for if the plant or the animal is fitted by nature for living in the sea, there is no surface-action of the sea upon it as long as it is in the living state; and it consequently has no tendency whatever toward the shore. But when either plant or animal dies, and ceases to perform its functions, including the production of the water-repelling mucus among the rest, it is immediately subjected to the economy of the waters, just as if it were a dead thing; and then the action of the sea casts it on the shore, as having no longer connexion with the energy and economy of living nature there. This is the cause of the vast accumulations of shells with which we meet on various shores, and on some of the shores of the Channel Islands among the rest; and it is also the reason why that sea-weed, which is so valuable to the Channel Islanders, comes ashore in considerable quantities, after those violent disturbances of the ocean waters which have torn it from its natural situation as a living vegetable, and transferred it over to those dead products which the sea invariably casts upon the strand, as being no longer useful in its very varied economy.

If the people of the Channel Islands were fully aware of this peculiar property of dead sea-weed, it might save them no small portion of their labour at those times of the year when the time arrives to cut and carry this weed as a very necessary article of their provision, both domestic and agricultural. If they were simply to cut it down—that is, to sever it from the tentacula or roots by which it adheres to the rocks without deriving any nourishment from them—then it would not go out to sea, but would be collected in the bays in the creeks to probably the same extent as now, and with a great reduction of labour to those whom it is valuable as an article of domestic economy.—MUDIE.

BRUNELLESCHI, AND THE CATHEDRAL OF S. MARIA DEL FIORE, AT FLORENCE.

If we date from the death of Justinian the entire disappearance of the system of, and the taste for, the architecture of Greece and Rome; and if we pass over the long and gloomy period wherein the fairest works of antique art were a prey to the ravages of the Northmen, we shall find that Italy prepared the way for the restoration of good taste, and that Filippo Brunelleschi was the first to prepare the way for its reception.

This illustrious Italian, born in 1375, was descended from an ancient Florentine family: his father was a notary, to which profession young Filippo was destined. He received a good education, but his father observed with some dissatisfaction that his son was more attached to the ingenuities of the hand than to the culture of the head; and in despair of making him excel in literature and law, he placed him with a goldsmith, an art which was then in great repute, since it was intimately connected with the finest of the arts of design, which the ornamental taste of the Roman Catholic religion fully developed and encouraged.

Our young artist became captivated with the charms of sculpture, which taste was encouraged by an acquaintance with the afterwards celebrated sculptor Donatello. Filippo also studied with great assiduity the sciences of geometry, optics, and mechanics; and his young and ardent fancy looked forward to architecture, as the subject on which his genius was to display its full power; so that, when Donatello was about to visit Rome for the purpose of studying sculpture, Brunelleschi determined to accompany him to gaze upon the architectural monuments of antiquity, which at that time were not only forgotten in Rome, the place of their birth but the principles upon which they were constructed were unknown to the whole world.

It is one of the grand properties of genius to see clearly that which to other eyes is obscure. Many of the professors of art and science, in their numerous important and extensive departments, are undoubtedly men of great and exalted talent; they follow in the path of their predecessors, and simplify and improve our knowledge; but the man of genius does more than this; he penetrates deep into the mysteries of nature, removes the veil which prevents other men from seeing farther, opens new fields of research, discovers hidden principles which are new, or explains and brings out into the light of day such as have long been lost.

When Brunelleschi arrived at Rome he was lost in surprise and admiration at the sight of so many architectural wonders, which in his day existed in a better state than at present. The world is five centuries older than when our young architect first sat down among the ruins of imperial Rome. His wonder seems to have bewildered him; so that it required a long time before he could acquire that sober state of mind necessary for the study of these wonderful models. Even then he is said to have forgotten the commonest offices of life,—the hours of repast and of sleep. He was constantly constructing plans,—measuring antique edifices,—obtaining exact proportions,—and endeavouring to establish the true characters of the three orders, so as to arrive at that system of reason, intelligence and harmony which was to re-establish and perpetuate the authority of his principles. The ambition of becoming the restorer of ancient architecture sustained his courage and excited his ardour; his pecuniary resources were exhausted, but his profession of goldsmith supplied him with daily bread: his enthusiasm in the cause of architecture was genuine:—it was not of that weak and flimsy nature which wears itself out in protestations of what it *will do*:—his was the "deep stream which bubbles not:"—it sources were concealed within himself, and they were not communicated even to his intimate friend Donatello, who returned to Florence, leaving Brunelleschi at Rome amid the ruins of past grandeur.

We come now to notice the work upon which the fame of Brunelleschi chiefly rests. The grand Basilica or the Cathedral of Santa Maria del Fiore at Florence was commenced by Arnolfo di Lapo, about the year 1295, a few years before his death. It appears that Arnolfo, in the conception of a vast plan, intended to cover the spacious octangular area between the four branches of the cross with an immense vault. This, however, is only conjecture; since the architect did not leave behind him any plan for inclosing this enormous space. He and his contemporaries had no knowledge of the resources of Greek and Roman architecture; and the knowledge and skill of the time did not warrant such an undertaking as this gigantic dome. The only person who at all favoured the practicability of such a scheme was Brunelleschi, whose secret ambition when at Rome, was to erect this great work without any centering, or internal support from carpentry work, but, taking as a point of departure, the summit of the nave, to build his vault in stone, and to make its elevation proportionate to the rest of the edifice. At that time such a project as this was thought to be wild and visionary.

Brunelleschi wanted only a little more knowledge in the art of construction. He again applied himself, and interrogated the monuments of antiquity: he looked into these works for the reasons of their solidity; the means whereby they were executed; the relations of their masses; the processes whereby the materials were worked; the secrets of their union and of their transport and position; the mechanical laws whereby to calculate forces and resistances; the boundary line, in short, between boldness and temerity.

In 1407 Brunelleschi returned to Florence. In this year the most eminent architects and engineers were convened from all parts to deliberate on the best means for completing the cathedral. Many formidable difficulties were opposed to the construction of a single vault, and there was no existing building which could be taken as a precedent. The dome of Sancta Sophia was somewhat smaller in diameter than the one now proposed: this one, together with that of St. Mark's at Venice and the cathedral at Pisa, was constructed under such very different circumstances as to afford little practical information to bring to the construction of the new dome. Brunelleschi, however, had solved the difficulty. He appeared at the meeting, and with great sagacity and self-restraint, revealed a part only of his plan. He foresaw that the exposition of the whole of it would have the effect of placing those weapons in the hands of another which he felt himself destined to yield. He advised, therefore, that the substructure of the future cupola should be commenced, and certain other precautionary measures used, until the final decision of the meeting should be made. This advice was agreed to, and the plan recommended by him was put into practice.

Delighted thus to have imparted the first impulse to this great work, he devoted many months to the construction of his models. A second meeting of architects and engineers was convoked, in order to arrive at a final decision, when Brunelleschi suddenly quitted Florence and went to Rome.

And here is another remarkable feature in the mind of this extraordinary man. He calculated upon the weakness of human nature: knowing that men often seek eagerly after that which is afar off, and as it were inaccessible, but which, if close at hand, and easily obtainable, they too often despise, he calculated that his services would be the more appreciated in Florence, when they must be sought after in Rome. Nor was he deceived, for scarcely had he departed when his absence

CATHEDRAL OF SAINT MARIA, AT FLORENCE.

from the meeting was severely felt. The judges recalled to mind the superiority of his arguments and of his knowledge, and the ascendancy which he had assumed and maintained in the first conference over all his competitors. They sent to him, and told him that the fate of the enterprise depended on him, and begged him to hasten his return. Brunelleschi did return: he appeared again before this assembly, and saw that it was composed of men made timid rather by the feeling of their own inexperience and insufficiency for the task than by their knowledge of its difficulties. The time was wasted in vain discussions and timid propositions. Brunelleschi sought neither to augment their fears, nor too much to diminish them. He spoke to them as follows:

I will not conceal from you the magnitude of the difficulties belonging to the project which occupies our attention. It is the peculiarity of great things to be difficult. I think I see, even now, obstacles greater in character and in number than you perhaps have imagined. I doubt whether the ancients would ever have dared to construct a vault of such tremendous magnitude as the one we now propose to raise. I have long meditated on the means for so adapting both the internal and external construction of it as to insure success; but the peculiar form and the great height of the edifice scare me. If our vault were circular I would resort to the method adopted by the ancients in the Pantheon or Rotunda. But here we have eight facets, and consequently eight upright courses of stones to elevate, which we must unite with the rest of the structure; thus the affair becomes more difficult, and no one can be better assured of the difficulty than myself. God forbid, however, that I should despair. Who can doubt that the Great Author of all science, to whose honour this magnificent temple is erected, will not confer strength, intelligence, and genius on him who shall be selected for this undertaking? As for me, who am not commissioned to this work, how can I be useful to you? If the matter rested on me alone I confess that I should feel courage, and doubt not of finding the means of success, without encountering so many difficulties. But how can I reveal to you these means, since you have as yet decided on nothing? My advice is, that if you wish determinedly to proceed with the execution of this grand design, you be not content with what I may propose, but that you assemble here from all parts of Europe the most skilful masters of the art, submit to their searching deliberation all the points of difficulty, and then decide finally in favour of him who shall propose the most simple and effectual plans, and announce them with the greatest rectitude of mind and judgment.

Thus artfully did Brunelleschi argue. His advice was adopted, but he refused to show his model. Clever as a tactician, as well as profoundly skilful as an architect, he sought by concealing himself from curiosity to excite it the more. He pleaded business at Rome, and thus eluded the premature offers made to him. He set out on this third expedition, in order to gain a fresh accession of strength among the models of antiquity for the great trial which he himself had provoked. Here we must leave him, and conclude the subject of this notice in a future article.

ON CHESS. No. XIX.

On the Powers of the Pieces and Pawns,

(Concluded.)

Another variation of value arises from the following circumstance:—Suppose a bishop to be at one end of a diagonal line of squares cleared of pieces: a queen or rook could not be placed on any square of that diagonal without being *en prise*, a circumstance which, from their superior value, would be avoided, whether they were supported or not. Also a bishop, knight, or pawn could not be placed on that diagonal, without capture, unless supported. A similar power is possessed by the other pieces, and may be thus expressed:—if a piece commands a certain range of squares, the opposite party cannot place on any square of that range a superior piece, or an unsupported equal or inferior piece, without immediate loss. It will be observed, that this is not the power of moving along a line of squares, but of preventing the antagonist from occupying any square of that line without loss. Supposing the board to be about half-cleared of men, the power of the relative pieces in thus preventing the opponent from occupying any square in a particular line, has been calculated to be

Pawn	... =	2
Knight	... =	5¼
Bishop	... =	7¼
Rook	... =	10½
Queen	... =	17

But if we now omit all hostile proceedings, and consider simply how many squares a piece may command, without taking any opposing piece, we arrive at different results, principally because the pawn moves straight forward when merely making a move, but diagonally when capturing. The proportionate number of optional squares within the reach of the piece at one move,—supposing the board, as before, to be about half-cleared of combatants,—have been calculated at

Pawn	... =	1
Knight	... =	5
Bishop	... =	7
Rook	... =	10
Queen	... =	16½

Suppose we wish to attack a particular piece with one of our own. If ours happen to be a pawn, we can do so by moving it to one square only; but if it be a bishop, the diagonals may be so far clear as to allow of our doing it in either of the directions. Place the black king on his own square, and the antagonist white bishop on its queen's bishop's 2nd.: the bishop can give check at two different squares. With the king in the same position, and the antagonist rook on its own square: the rook can check at two different squares. With the black king in the same position, place the white queen on her bishop's second: she can check at six different squares. Place the white knight on his king's fourth; he can check the king on two squares. In all these cases, we suppose the attacking piece to be free from any obstruction, either from an ally or an antagonist. From this enumeration of powers it is seen, that when a particular piece is to be employed to make an attack on a particular antagonist piece, it may often be done on more than one square. But as the intervention of other pieces would in some degree prevent this from being done, and as the presence of other pieces blocks out some more than others, according to their different modes of movement, we have hence a new scale of powers. The comparative power of the different pieces, in choosing what point to select as a position of attack, has been estimated at

Pawn	... =	2
Knight	... =	6
Bishop	... =	6½
Rook	... =	11
Queen	... =	24

Let us assume that a piece is actually attacked. In order to save it, one of three things must be done:—1st., to capture the attacking piece: 2nd., to interpose another piece: 3rd., to remove. Now different pieces have these several powers in different degrees; and to compare them it will be convenient to suppose that the attacking piece cannot be captured without loss: there will then remain two modes of releasing the piece. If the attack be made by a pawn, nothing can be interposed, since the belligerent pieces are close together: the assailed party has, therefore, nothing to do but to remove to a more distant square. If the attacking piece be a knight, no interposition will ward off the attack; on account of the peculiar privilege of this piece in leaping over other pieces. If a bishop attack a rook, interposition will not save it, because the bishop may take the interposed piece, without being re-captured by the rook; this arises from the circumstance that the rook has not the *diagonal* power of the bishop: removal is the only way of saving the rook. For a somewhat similar reason, if a rook attack a bishop, no interposition will save it, because the bishop and the rook move in different ways:—interposition is, therefore, of no avail. In all these examples it is assumed that the attacked and the interposed pieces, are not supported or defended by others. From a minute calculation of the various kinds and degrees of this power, it is found that the *dislodging faculty*, or the power of an assailant to compel the removal of an assailed piece, is greater in the pawn and the knight than in the other pieces in comparison with their generally inferior power, being in the ratio of

Pawn	... =	0·8
Knight	... =	2·8
Bishop	... =	1·0
Rook	... =	2·9
Queen	... =	4·7

From the circumstance of a pawn being capable of promotion to the rank of a piece, its value is greater than it would be if that privilege were denied; and as it alone is capable of this sudden increase of power, the ratio of its value when compared with the pieces, is higher. The pawn has likewise an increase of comparative power resulting from its use as a *support* for a superior piece. If a piece make an attack on another of inferior value, a pawn may be as effectual a support for the latter as a superior piece would be: this circumstance also increases the ratio of the pawn's power. On the contrary, if two pawns become, by capture or exchange, placed one behind the other, or "doubled," the power of the hindmost one is much decreased, particularly if on the rook's file; so much, indeed, that the two together are deemed not to be worth more than one pawn and a quarter under usual circumstances. Another circumstance which modifies the power of a pawn is the contiguity or not of another pawn on the adjoining file; if a pawn is isolated, that is, if neither of the adjacent files is occupied by a pawn, the pawn's value is below the average hitherto expressed; but if it be supported by pawns on both the contiguous files, its value is greatly enhanced. These details show how much the value of a pawn depends on position.

Lastly, there is a difference of power in different pieces in giving checkmate to the adverse king. When the king has no pieces or pawns left for his defence, the attacking pieces show degrees of power very different from those which they possess in the usual course of the game. A rook is of almost infinite value compared with a bishop or a knight; for while the former, acting in conjunction with the king, may give checkmate, and must do so if proper care be taken, a knight or a bishop cannot. Under such circumstances a rook is nearly as valuable as the queen, for the latter has now a surplus amount of power which cannot be brought into use; and checkmate is given nearly in the same way by the rook as by the queen, only rather more slowly.

The reader will now be in a condition to understand, from this brief and necessarily imperfect sketch, how many circumstances must be taken into account before we can correctly estimate the relative value and power of the combatants in the chess battle-field. In order to elicit something like a practical rule which may be valuable in play, all the several lists which we have given, and a few more besides, are added together, and the total balance of each power compared with that of the others. The values of any particular piece, in moving over the open board—in moving over a board about half cleared by play—in keeping off an antagonist from a particular set of squares—in making an attack on two or more different squares—in dislodging an antagonist from a particular square—in giving mate without the aid of other pieces, &c.,—are added together: this is done for each piece; and finally, the whole are reduced to smaller numbers by making a pawn = 1. The final relative values then are as follows;—

Pawn ...	= 1·00
Knight ...	= 3·05
Bishop ...	= 3·50
Rook ...	= 5·48
Queen ...	= 9·94

As, from the nature of the game, the king is invaluable, since he is never exchanged or captured, he is excluded from the computation. It will be seen, from this list, that a knight is worth about three pawns; and that a rook is worth a bishop and two pawns, or five pawns and a half. There appears to be nearly half a pawn difference of value between the knight and the bishop; but the most experienced players are generally willing in an indifferent part of the game, to exchange one for the other, thereby implying that the two are valued equally. This would appear to show that the computed values are not quite correct; but the discrepancy has been explained in a remarkable manner. Suppose a bishop and a knight to be on the board, but not immediately attacking each other. Take the average state of the board, and the bishop could attack the knight in a smaller number of moves than the knight could attack the bishop, arising principally from the knight being unable to act at a distance. This smaller number of moves is often sufficient to give "the move," the advantage of which in an average state of the game is reckoned to be equal to half a pawn: this value, added to that of the knight, would account for the superior value of the bishop.

The result arrived at in this manner is found to be sufficiently near to that which experience points out to the player, to merit attention; still the mode in which it is arrived at is too uncertain and conjectural to give it a scientific character. The time has not yet arrived for applying the rigour of mathematics to the game of chess, so as to demonstrate the excellence of one move over others, in the precise ratio of the powers possessed by the pieces. The great dependence of the player's success on *position*, independent of the *number* of his pieces, and the striking effect which the single move will often produce, have hitherto prevented any attempt to include the whole game in a system of mathematical laws. Until this can be done, we doubt whether chess ought to be termed "science;" since we are accustomed to apply this term to those subjects only which fall under the influence of general laws or principles which are universally admitted.

God is a Spirit none can see,
He ever was, and e'er shall be:
His eye, with infinite survey,
Views every realm, by night or day.
What has been, is, or shall be done,
Or here, or there, to Him is known;
Nor can one thought arise, unseen,
In mind of angels, or of men.—Doddridge.

FATHER LONG-LEGS, (*Tipula rivosa.*)

Few of our readers, perhaps, are unacquainted with the slender, fragile insect popularly called *Father*, or *Harry Long-legs*. During the evenings of autumn they must have noticed its long and delicate limbs reposing on the shrubs in their gardens, or more probably they have witnessed its ineffectual struggles to extricate those feeble limbs from the spider's web, or from the alluring candle, towards which, in common with many other insects, it is too apt to hasten.

This insect is the largest of the European Tipulæ, being often more than an inch and a half in length, and possesses characters which are shared by the other species of that genus, and are sufficient to distinguish them from gnats and other somewhat similar insects. These characters are the length and trifling bulk of the body, the extent of the wings, and the length and slender form of the legs, which are also remarkably fragile, so that it is difficult to handle the insect without breaking them, and they even appear insufficient for the support of the body, which the insect balances, and causes to vacillate continually. This vacillation is attributed by Kirby and Spence to the weight of the body and the elasticity of the legs, and the object of it is supposed by them to be in some way connected with respiration. Rennie conjectures that this constant motion may be for the purpose of exercising themselves and of driving the fluids into their long legs, which may not be effected in the exercise of flying on account of their legs then remaining almost motionless. Another point by which the insects of this genus may be easily distinguished from gnats, is the mouth, which in Tipulariæ projects but little while in gnats it forms a long proboscis.

The larvæ of these insects vary much in their form and habits, some being terrestrial, others aquatic. In general they resemble elongated worms, with the body divided into rings; sometimes they are furnished with appendages performing the office of feet, in other cases they are entirely destitute of such aids to locomotion. The head is of an invariable figure, but in those of the larger species it is small, and usually concealed under the first ring. It is furnished with two fleshy horns, two hooks, and two scaly pieces: the last-named appendages serve to cut and bruise the aliment on which the larvæ feed. Their respiration is carried on by means of two stigmata, situated in the last ring of their bodies, which is considerably depressed. They live beneath the earth, at the depth of one or two inches, and are most abundant in wet pastures. Their food is said by most writers to consist of the softer kinds of vegetable substances, the fine fibres of roots, &c., but in the supplementary notes to Cuvier's *Insecta* it is stated that they feed on earth and soil, and that although they do not eat plants, yet, nevertheless, they do them much injury, because as they often change place, they raise and detach the roots, which they expose to be dried up by the sun. These larvæ are also found in the cavities of half-rotten trees, where they find a mould of a rich quality. They undergo their metamorphosis in the earth, and change there into the chrysalis state. In this new form they are of a greyish colour, and the rings of their bodies are covered with projections and spines inclining backwards. The organs of respiration are now situated on the head, and consist of two horns, differing in length according to the species. The use of the spines becomes evident as the time of the last metamorphosis approaches. By their means the larvæ push and raise themselves above the surface of the earth to the height of about half their body, and thus they await their final change. At length the skin of the chrysalis bursts open and releases the perfect insect, the elegant Tipula, to the enjoyment of life and liberty. It is during the month of September that this last change takes place, and at that time in situations such as we have described the perfect insects

are very abundant, walking upon the tops of the grass as if they were placed upon high stilts, or flying up in swarms into the air, with a faint but perceptible noise occasioned by the action of their wings. Latreille, in noticing the singular organs called balancers, or poisers, situated near the wings, in these and other dipterous insects, says, that they occupy the situation of the spines in bees and wasps, with spiracles in the same manner situated behind them, whence it is evident that the hinder part of the chest, where these balancers are, corresponds to the part which in the male cicada and the cricket contains the organs of sound. But from the observations of De Geer and other naturalists, it appears that the buzzing of insects is continued after they have have been deprived of these organs, therefore they can be in no way connected with the production of sound. The true use of the balancers is that which their name imports, and which is thus explained in the language of Derham; "If one of the poisers, or one of the lesser auxiliary wings, be cut off, the insect will fly as if one side overbalanced the other, until it falleth to the ground; so that if both be cut off they will fly awkwardly and unsteadily, manifesting the defect of some very necessary part. The use no doubt of these poisers and secondary lesser wings is to poise the body, and to obviate all the vacillations thereof in flight, serving to the insect as the long pole, laden at the ends with lead, does to the rope-dancer." Another naturalist (*Schelver*) is of opinion that the poisers are air holders, and affirms that without their aid the insect is unable to fly at all.

The attitude of the female in laying her eggs is very singular. Supporting her body in a vertical position by by means of her hind-legs, she thrusts the extremity into the earth and deposits one or more eggs in the hole thus made; she then moves forward without altering the position of her body, and proceeds with her task in a similar manner in another place. The ovipositor of this insect is well adapted to this method of working, as it consists of a sort of pincers of a horny consistence and sharp at the point. The eggs are small, oblong, a little curved, and of a shining black. Each female lays a large number of these eggs.

The larvæ of smaller tipulæ are found, some in cow-dung, some in different kinds of mushrooms, and others in the water. A singular species infests the agaric of the oak, though it does not penetrate into the substance of the plant, but remains underneath it. The skin of this larva is humid, and it covers the places where it passes with a gluey coat, which it produces at its mouth. It forms a curious little nest or tent of the same material, and finally spins a cocoon of a conical figure, and with a rough surface, in which it incloses itself, and changes into a chrysalis. In this form it remains about fifteen days, when it emerges as a perfect insect.

The aquatic larvæ are numerous, and differ much from each other in conformation. Some of them live in holes in the banks of streams where the water reaches them; while others are more active in their habits and swim with great agility. Many inclose themselves in cases, formed of any available materials within their reach; in fact, these aquatic species have little in common but the stigmata, or breathing processes, the number of which is the same in all. In their chrysalis state they also vary nearly as much as in the first stage of their existence. Some remain entirely without motion at the bottom of the hole which the larva had inhabited, others swim and run with swiftness in the water. All are provided with respiratory organs, and apply them to the surface of the water to pump in the air. The insects produced from these larvæ are rather small, and are frequently mistaken for gnats.

In their perfect state the tipulæ are largely destroyed by birds, and yet their numbers are very great, as must be evident to most persons living in the country. The larvæ of the aquatic species also afford food to fish and to carnivorous aquatic insects.

There are several other species, besides the large insect already described (*Tipula rivosa*), to which we may briefly direct the attention of our readers. They are commonly spoken of as *crane-flies*. The garden crane-fly (*T. hortorum*) is rather smaller than *T. rivosa*, and is produced from a larva and chrysalis of a darker colour. The wings of this species are transparent, with obscurely marked whitish variegations.

Another very common species is *T. oleracea*, nearly similar in size to the preceeding. It has transparent wings with a dusky rib or upper edge. In the larva state some insects of this species were made the subject of an experiment by Mr. Stickney (as related by Kirby and Spence), in order to ascertain their power of resisting cold. Several of the grubs were exposed to a severe frost, till they were congealed into masses of ice, yet some of them survived.

Tipula cornicina is described by Shaw as being of a middle size, with transparent wings having a marginal dusky spot. The body is yellow, with three longitudinal dusky streaks. Its larva, which is found in meadows, &c., is brown, with a flattened, or truncated tail, beset with a certain number of radiating soft spines or processes, and the chrysalis is slender, and furnished, as in most others, with minute spines about its segments, by the assistance of which it is enabled to raise itself to the surface of the earth when its final change approaches. There are not many insects in this genus adorned with lively colours; *T. crocata* however, is of a polished black, with yellow rings round the abdomen.

One of the most familiar specimens of the smaller Tipulæ may be observed in great numbers on windows in the decline of summer. It is an elegant species called by Linnæus *Tipula phalænoides*. Its general length is about the tenth of an inch, and the wings, which are very large in proportion to the insect, are of an oval shape, and of a grey colour, mottled and variegated in an elegant manner with dusky specks. The edges of the wings are fringed with hairs, and under the microscope the whole insect presents a beautiful appearance.

Another species is called *T. plumosa* from having plumed antennæ. It is of the size of the common gnat, and is one of those aquatic species already mentioned as so greatly resembling that insect.

It is a curious fact, that children are the best judges o character at first sight in the world. There is an old Scotc proverb, "They are never cannie, that dogs and bairns dinn like;" and there is not a more true one in the whole collec tion.—James Hogg.

LONDON:
JOHN WILLIAM PARKER, WEST STRAND.
Published in Weekly Numbers, price One Penny, and in Monthly Parts, price Sixpence.
Sold by all Booksellers and Newsvenders in the Kingdom.

THE

Saturday Magazine.

Nº. 597. OCTOBER 23RD, 1841. {PRICE ONE PENNY.

TURKEY AND THE TURKISH PROVINCES.

STREET IN MECCA.

MECCA AND ITS INHABITANTS.

In our recent article on Antioch, we promised to visit some of the more southern towns of the empire, such as Mecca and Medina, with a view of shewing their chief points of difference from the towns of European Turkey. We shall therefore treat of Mecca in the present paper, and devote a subsequent article to Medina.

Both Mecca and Medina are situated in Arabia, and it seems desirable to mention in what way they are connected with the Turkish empire. After the downfall of the Caliphs and the rise of the Ottoman power, all the fertile parts of Western Arabia, as well as the principal cities, came under the Turkish government one by one; and in the province of Hejaz, in which both Mecca and Medina are situated, the Turkish supremacy has been shown somewhat in the following manner. The Sultan, as protector of the Mohammedan Holy Places, appoints a Pacha of Hejaz, who resides in the port nearest to Mecca, with a Turkish guard, and divides the receipts of the custom-house with the sheriff of Mecca. The rise of the Wahhabites, and the ambitious designs of Mehemet Ali, have somewhat disturbed this arrangement; but we believe that, nominally at least, the Sultan retains this supremacy.

The city of Mecca, the birth-place of Mohammed, is situated about one day's journey from the Red Sea, in a valley which winds irregularly between two mountains; and is surrounded by a district presenting an appearance of the greatest sterility. Not a river, streamlet, or brook, refreshes the traveller in this sandy valley, or awakens the least appearance of vegetation on its surface. Inclosed by high mountains and sterile sands and exposed to the heat of a scorching sun, the inhabitants are dependent on other places for provisions; their own soil being unable to repay the labour of the cultivator. Their markets are furnished with a supply of flour from Egypt, with vegetables and rice from India, and with herbs, &c., from Tayif—the price being proportioned to the difficulty of obtaining them. The lower classes of people obtain water from wells, and though it is heavy and brackish they never drink any other; those who can better afford to pay for it, get their supply from the neighbouring mountains, where rain-water is collected for that purpose. It is remarkable, that there are very few dogs in Mecca; most other Mohammedan towns, in a climate similar to theirs, are overstocked with these animals, and are likewise infested with swarms of insects and vermin, from which the sacred city is in a great measure exempt

The chief annoyance in this respect is experienced from mice of the European kind, which are numerous and very bold. A traveller, who remained some time at Mecca, informs us that these troublesome visitors would leap on his bed and stare in his face; and that on one occasion, when he neglected to wash some balm of juniper from his hand, they bit his fingers severely while he slept.

It may be supposed, from what has been said of the confined situation, aridity of soil, and absence of vegetation of the valley in which Mecca stands, that the climate must be very unfavourable to the health of its inhabitants; but this does not seem to be altogether the case. That they are a poor, meagre, wretched-looking race of men, and that they seldom live to be very old, we have the testimony of several travellers to assure us; but they appear to be liable to few diseases of a chronic nature, and to suffer less than we might expect from the many deprivations attending their isolated position and burning climate. The melancholy appearance of these people corresponds with the constitution of their minds: they are naturally inclined to sadness, and the sound of singing is rarely heard in Mecca, while musical instruments seem to be entirely unknown. They are, however, quickly irritated, and their slaves are said to receive worse treatment than any others among Musselmen.

It falls not within our province to notice the circumstances attendant on the birth of Mohammed, which event took place at Mecca in the year of our Lord 569, or the steps by which he attained that dominion over the minds of men which led them to embrace all that fell from his lips as the truth of God, however much it might militate against the common laws of justice and humanity, or give a sanction to immorality and crime. We have only to do with the scene of his early years, where before prosperity had altered and sullied his views, he spent much time among the mountains that surround his city in meditating on his future plans and on the abolishment of idolatrous worship, which his strong mind rejected and abhorred. On his account, therefore, not only the city itself, but the whole neighbourhood of Mecca, is viewed by his disciples as a place of peculiar sanctity, and has been for ages the centre of Mohammedan worship, and the object of continued pilgrimage from all parts of the world where his followers live. By the law of his religion, every Musselman is obliged to go, once in his life at least, to pay his devotions at Mecca; but there must have been found a way of dispensing with this law, or of evading its requirements, since the number of the pilgrims at Mecca, grows less every year; and instead of crowding in multitudes, as formerly, from all parts of Asia and Africa, and bringing with them rich presents for the support of the temple at Mecca, the pilgrims are now comparatively few in number, and devoid of wealth: so that the present situation of the inhabitants of Mecca, who have no other source of livelihood than that which arises from the visits of pilgrims to their city, forms a remarkable contrast with that of their ancestors, who abounded in wealth from the same cause. So poor is the place by nature, and so grossly ignorant are its inhabitants, that they exist in a state of pitiable dependence on the religious enthusiasm of others; and in case the visits to Mecca should altogether cease, it must inevitably be deserted by its wretched people or reduced to a simple *douar* or hamlet.

Ali Bey gives the following account of the state of the arts and sciences in Mecca:—

I believe there is no Musselman city where the arts are so little known as at Mecca. There is not a man to be found who is capable of making a lock, or forging a key. All the doors are locked with large wooden keys, and the trunks and cases with padlocks brought from Europe. Slippers and sandals are brought from Constantinople and Egypt; for they know not how to make them at Mecca, except, indeed, those of wood or untanned leather, which are very bad. There is not a single man to be found who knows how to engrave an inscription, or any kind of design on hewn stone, as formerly; nor a single gunsmith or cutler able to make a screw, or to replace a piece of the lock of a European gun; those of the country being able to manufacture only their rude match-locks, their bent knives, lances, and halberds. The sciences are found in the same state as the arts at Mecca. The whole knowledge of the inhabitants is confined to reading the Koran, and to writing very badly. They learn from their infancy the prayers and the ceremonies of the pilgrimage to the house of God, to Saffa, and to Merona, in order to be able at an early age to gain money by officiating as guides to the pilgrims. Children of five and six years old are to be seen fulfilling these functions, carried upon the arms and shoulders of the pilgrims, who repeat, word for word, the prayers which the children recite, at the same time that they follow the path pointed out by them to the different places.

The city of Mecca is undefended by walls, and is quite open on all sides. It has a strong fortress on one of the hills, and there are some isolated towers in the valley, but they are capable of containing only a small garrison. Many of the buildings are grouped together at the north of the temple, and are prolonged through the valley in the form of a crescent. The principal streets are regular, and some of the houses are very handsome. They have, like the Cyprian dwellings, two rows of windows, with balconies covered with blinds. There are several large windows, quite open as in Europe; but the greater part are covered with a curtain made of palm-tree. These curtains are extremely light, and effectually screen the apartments from the rays of the sun, while they do not intercept the entrance of the air. The houses are mostly of stone, three or four stories high, and ornamented with mouldings and paintings. The doors have generally a base, with steps and seats on both sides. All the staircases are narrow; but the rooms are lofty and well proportioned. Every inhabitant has a particular interest in the preservation and adornment of his dwelling, in order that it may invite the attention of pilgrims: whose payments for lodgings during their stay in the city, with the gifts which they are induced to bestow, are the only means of livelihood for the people during the remainder of the year.

The population of Mecca is rapidly diminishing. Some parts of the city lie entirely abandoned and in ruins, and two-thirds of the remaining houses generally stand empty. Notwithstanding the reputation for holiness which belongs to the city, the morals of the people are said to be more depraved than those of the inhabitants of any other Moslem city. Their thievish propensities are indulged in the very temple itself; and they seem wholly indifferent to the degraded and miserable condition to which they are sunk. The women have a graceful appearance, and speak very well and with much feeling; but they are greatly disfigured by the practice of making indelible drawings on their skin, and of staining their eyelids and teeth, the latter of a bright yellow. Their lips, feet and hands they stain with a red colour; and the materials they employ for this purpose are the same as those used by the Egyptians. Their dress consists of an immense pantaloon of Indian striped cotton, a loose robe bound round the waist with a belt; and a caftan of India cotton. Their ornaments are rings and bracelets, which they wear on their arms, legs, and feet; and occasionally a nose-jewel hanging down on the upper lip. The costume of the men is composed of a *benish*, or exterior caftan bound with a belt, a shirt, drawers, and slippers.

The greatest curiosity in Mecca is the Kaaba or "House of God" which is of high antiquity, and which was held in great veneration by the Arabs, long before the time of Mohammed. It is built of square-hewn, but unpolished stones of quartz, schorl, and mica: its height is thirty-four feet four inches, and its four sides, (for it is nearly square,) vary from twenty-nine to thirty-eight feet

in length. In the angle formed by the north-east and south-east sides, is placed a large black stone, which is raised forty-two inches above the pavement, and is bordered all round with a plate of silver about a foot broad.

This much admired stone is believed by all true Moslems to have been at first a transparent hyacinth presented to Abraham by the Angel Gabriel, who brought it from heaven; but being touched by a sinful woman, it became black and opaque. It is said to be a fragment of volcanic basalt sprinkled throughout its circumference with small pointed, coloured crystals, and varied with red feldspath, upon a black ground.

The whole of the Kaaba, except the base, is covered with a curtain of black cloth. This cloth, which is called *Tob el Kaaba* (the shirt of the Kaaba,) is renewed every year; but, instead of being spread over the building, it is at first, fastened up in drapery, to keep it from the hands of the pilgrims; and thus it is represented in our engraving. The Tob has a gold band two feet broad, surrounding it at two-thirds of its height; and on this band are inscribed numerous passages from the Koran. A new curtain is also sent every year to cover the door, which is truly magnificent; being embroidered all over with gold and silver.

The interior of the Kaaba consists of a room or hall, with two pillars to support the roof. The columns and the wall are covered with splendid rose-coloured silk, sprinkled with flowers, embroidered in silver, and lined with white silk. This magnificent covering is presented by the Sultan of Constantinople, on his accession to the throne, and it is only on that occasion that it is ever changed. The floor is paved with very fine marble. From one column to another, and from both columns to the walls, there are bars of silver, from which are suspended a great number of gold lamps, one above the other.

Near the Kaaba, within a railing of bronze is a sort of sarcophagus, hung with a black cloth embroidered with gold and silver, and having golden acorns attached to it. We are told that this sarcophagus is nothing else than "a large stone that served Abraham for a footstool to construct the Kaaba, and increased in height as the building advanced, in order to facilitate his labours; at the same time that the stones came out miraculously already squared from the spot where the footstool now stands, and passed into Ismael's hands, and thence into his father's."

Inclosed within a small building also near the Kaaba, is the well Zemzem, believed by the Moslems to be the one miraculously opened by the angel of the Lord for Hagar, when nearly perishing from thirst in the desert with her son Ismael. The person who has the charge of this well, and is called the chief of the Zemzem, is a person of no small consequence. He gives out the water to the fainting pilgrims; and possessing the confidence of the chief officers of the temple, he is said to obey their wishes implicitly by taking the opportunity his employment affords, of administering poison to their enemies, and to those who have become in any way obnoxious to them.

The Kaaba is nearly in the centre of the temple. The ground round it is paved with fine marble, on which the pilgrims perform their circuit; for to walk seven times round the Kaaba repeating a certain number of prayers is one of the numerous ceremonies which a pilgrim has to go through. We cannot here describe them in their order; but the most important seem to be, kissing the black stone, drinking as much water as possible from the sacred well Zemzem,—making seven journeys between two of the hills and repeating loud prayers on each,—having the head shaved and repeating after the barber certain prayers,—performing their devotions in the Kaaba, and afterwards,—(if they are so highly privileged,)—assisting in washing the floor of the sacred building. The water thus employed, as it flows out at a hole made for the purpose, they collect eagerly,—drink it,—and pour it over their persons. Thus do these poor Mohammedans appease their own consciences, and imagine that they are propitiating the favour of God, by a round of empty observances and wearisome ceremonies.

The rapidly declining state of the city of Mecca and the great decrease in the number of pilgrims who pay their adorations at the birth-place of their prophet, will probably cause the foregoing description of the place, and its customs, to apply, in the course of a few years, to the *past* alone. The devastations committed in the neighbourhood of Mecca by wandering Arab tribes, have deprived it of many sources of attraction for the devotee. There is one principal object of pilgrimage, however, remaining, almost much venerated by pilgrims as those within the city itself; and with the mention of this we close our account of Mecca. The place we speak is a mountain called *Arafat*, where, according to the ridiculous superstition of the people, Adam met his wife, after they had undergone a separation for the space of two hundred years; and where *having built the chapel now standing*, he left Hejaz and retired with Eve into the island of Ceylon.

SUPERSTITION AND IMPOSTURE.

Among those persons who came to pay their respects to me, were two remarkable impostors residing in this neighbourhood, and acting in different departments of knavery: one of them had lately abandoned his claims to supernatural power, to save himself from present injury; and the reputation of the other I had completely ruined by convicting thieves to whom his god had promised concealment and security on receiving part of their plunder. The former of these knaves, an old man, had unluckily for himself inspired his neighbours with a belief that he had the power of bringing rain by performing certain ceremonies; and they had spread his fame over the whole district. From this, and his knowledge of the appearance of the sky, and the various signs of coming showers or approaching heavy rains, he had long imposed on the people, and reaped considerable profit; until at last their eagerness of belief outrunning his powers of imposition, not only destroyed his occupation, but nearly cost him his life. It was urged by some one, and acquiesced in by all, that, as there was no doubt of his ability to call down rain when necessary, it ought not to be left to his caprice when this talent should be exercised; and that when required by a whole village, he should be obliged to furnish rain in sufficient quantities: that, if he did so, he was to be liberally rewarded; but on the contrary, if he were contumacious, and refused to give the necessary supply, that he should be tormented with thorns, or beat into compliance. Having suffered severe punishments on various occasions, he at last made up his mind no longer to be a responsible agent for the weather, and loudly and constantly denied having any authority in the matter. This, although deemed to be a false excuse, proved a sufficient protection to him during several seasons in which there was no deficiency of moisture; but this season the people, losing all patience from a long-continued drought which was destroying their crops, dragged the recusant cloud-compeller to various villages, in which he suffered severely for his supposed neglect. Even the chief of the district had determined on having rain by force, if fair means proved insufficient, and had sent some of his followers to bring the conjuror to the village where water was most required; it was while on his way there that he was fortunate enough to see me, and, making his escape, threw himself on my protection. In the court-house the old man stated, that he was in terror of his life, for at present there was every appearance of continuance of the same dry weather that had already done so much mischief; and then gravely proceeded to prove to me by many oaths that it was no fault of his that no rain was forthcoming. I had some difficulty in protecting this old impostor, particularly as a few slight showers fell near his village, which was situated on one of the highest inhabited parts of the district; and I have no doubt that the people thought, not that they had been the infatuated dupes of a rogue, but that I was imposed upon by a churlish wizard.—Forbes's *Ceylon*.

THE VEGETABLE BUTTER OF AFRICA

In a Letter to the Editor of The Friend of Africa, *from* Mrs. (Bowdich) Lee.

Having been long convinced that the vegetable butter of Africa might form an important article of commerce, I send you a brief account of all that is known concerning it either as observed by myself or others, hoping, through the medium of your periodical, to awaken more attention to its valuable qualities than it has hitherto excited.

Mungo Park was the first traveller who spoke of the vegetable butter in so decided a manner as to give any idea of what it really is, although older writers mention it under various names for grease. In the countries which he first visited, it was called the Shea tolu, and he describes the tree from whence it is derived as resembling the American oak in appearance, adding that it is an article of food, and bringing a bunch of the leaves home. The flower has never reached this country, but the seed, or fruit, so decidedly refers the tree to the natural family of Sapotæ, that botanists have placed it there as a species of Bassia, differing from that of the tallow tree on the coast of Africa, and elsewhere. It extends over a large portion of the Continent, from Jaloff and Houssa, to the latitude of the Gaboon river; how much farther south is not yet known; but it has not been observed in the neighbourhood of the Congo. Mr. Lander constantly mentions it in his last voyage, under the name of "mi cadania," and in one instance he states that he received two hundred-weight of the butter as a present. I will not here insert any botanical description of the Bassia, as it will be easily found in Persoon's list of the class Dodecandria monogynia, and in other authors, but proceed to speak of my own knowledge of the tree and fruit. On my first arrival at Cape Coast, I constantly heard of the "Ashánti grease" as an indispensable article of the native toilet, for both males and females; and no sooner had I an establishment, than I was frequently obliged to purchase a pot of it for the use of my women. Without some aid of this sort I was told that their skins would become white and scaly, and even crack. When I omitted the supply, such constant recourse was had to the palm oil intended for the lamps, that for the sake of my olfactory nerves I hastened to repair the fault. It looked very dirty and smelt very disagreeably after it had been perfumed, so that I was obliged to insist upon its being used in its pure state; but even this was not sweet, owing to the dirty state in which it arrived from Ashánti. On his return from that place, Mr. Bowdich spoke highly of its fragrance when fresh, and of its use in cooking and burning; but a large pot of it which he had procured at Coomassie, (Kumási) was either lost, or stolen on his perilous route back to head-quarters. The vessel in which we embarked for England was bound to the Gaboon for a cargo of wood; and we, in consequence, were detained in that river for many weeks, at a distance of more than fifty miles in the interior, and in a latitude of 9° north. During this period we passed several days in the native town of Naange, where I had an opportunity of seeing the vegetable butter in its greatest perfection, though the season was past for procuring the flowers. The substance was perfectly white, and resembled English butter immediately after it is turned out of the churn. The food cooked in it, such as meat, fish, bananas, &c., had the most delicate flavour imaginable; no smell issued from it, and on biscuit it was excellent. I filled two small jars with it, into one of which I put salt, in the manner of potted butter, but this turned rancid before my four months' voyage was completed, while that in the other jar, having been simply clarified, remained sweet and fresh for years. I was very anxious to see the tree, although not in flower; but this was no easy task for a European female to accomplish, as it grew in the thickest part of the forest. Preceded, however, by two natives with hatchets to open the path, two more to frighten away reptiles, and scouts to give the alarm of wild beasts, and who made ten times more noise and fuss than was necessary, I was taken through the bush to a tall, straight tree, the bark of which resembled that of an ash. The branches sprang from the trunk at so great a height that we could not procure either leaves or pods, and all the advantage which I derived from my expedition was the power of saying that I had seen "the fat tree," as the natives term it. The governor of the town made up for my disappointment by giving me several of the nuts, and a fast-decaying pod; we put some of the former into boxes of earth, and brought them with us half across the Atlantic, when they perished, notwithstanding our care.

In the neighbourhood of the Gaboon the butter is extracted by first boiling the nuts, and then expressing the oil; the inhabitants deem it a most precious production, and great distress is felt when any scarcity of it takes place. Yet they use no precautions to increase the number of trees. Their favourite comparison for anything wonderful or advantageous, is "like the fat tree;" and in a song composed on first seeing white men, these are the words of the burden.

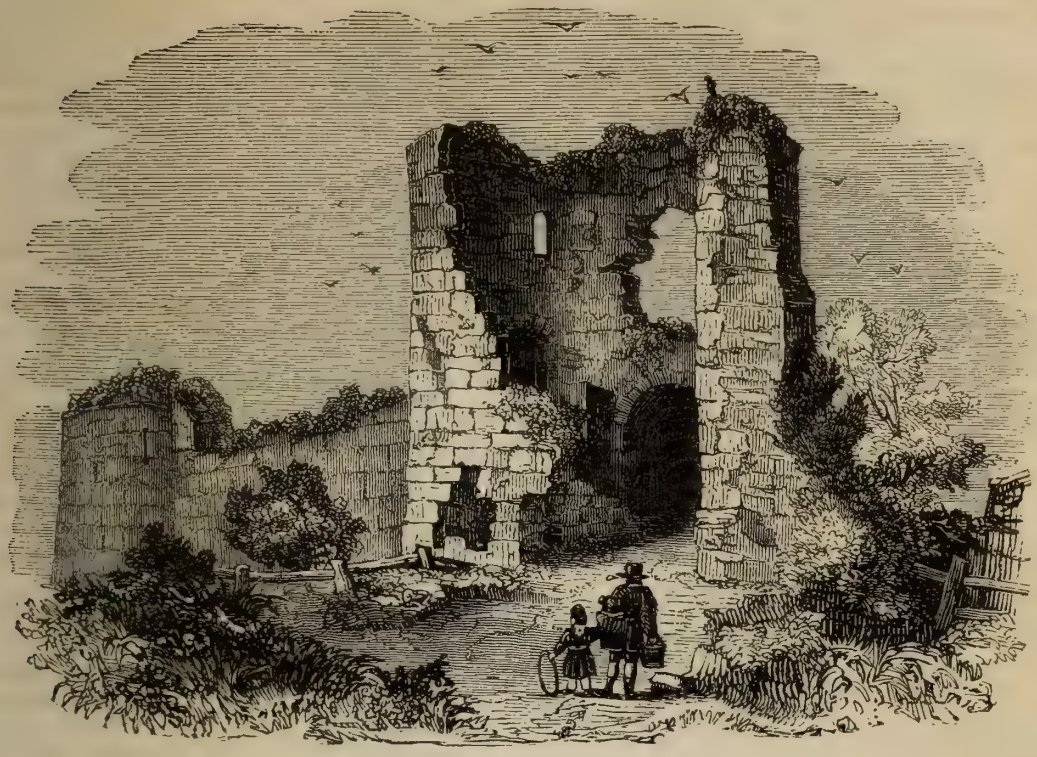
On going back to the vessel, I showed the nuts to a servant of mine from Booroom, a country to the east of Ashánti; she instantly recognised them, and told me that her people bruise the nuts, boil them, and when the oil rises to the surface of the water, they skim it off, and put it into calabashes to cool.

When I visited Africa a second time, I procured some of the butter from the Jaloffs, and when in England, I afterwards found it so healing to the skin in frosty weather, or easterly winds, that I submitted it to the inspection of M. Chevreul, the celebrated analyser of different kinds of grease, and the following is a translation of his report.

The substance sent to me by Madame Bowdich, under the name of vegetable butter, is formed:—1st., of a small proportion of aromatic principle; 2nd., of oleine; 3rd., of stearine. This last is analogous to the stearine of mutton fat, for in saponification it gives stearic acid. The vegetable butter is perfectly liquid at 112° of Fahrenheit, at 100⅔° it begins to get turbid, at 96½° it exhibits a liquid portion, in which float some small brilliant crystals. The liquid part is a combination of oleine and stearine, as are also the crystals, but the latter contain a much larger portion of stearine. A thermometer plunged into melted vegetable butter falls to 83¾°, it afterwards ascends to 89⅔°, when it becomes quite concrete. It is easily converted into soap, when heated with solution of potash, or soda, and the soaps thus obtained are analogous to those made from mutton fat, with this advantage, that they are inodorous. If it were possible to procure this substance in any quantity, and at a reasonable price, it might be advantageously employed by soap manufacturers; either mixed with vegetable oils to form soaps similar to those mixed with olive-oil, or alone for toilet soaps. Lastly, the vegetable butter appears to me to be capable of being employed for the same alimentary uses as the Cocoa Butter.

Man, for whom all things were made, was himself made last of all. We are taught to follow the heavenly Artist, step by step, first in the production of the inanimate elements; next, of vegetable, and then of animal, life; till we come to the master-piece of Creation, man, endued with reason and intellect. The house being built, its inhabitant appeared: the feast being set forth, the guest was introduced; the theatre being decorated and illuminated, the spectator was admitted to behold the splendid and magnificent scenery in the heavens above, and the earth beneath; to view the bodies around him, moving in perfect harmony, and every creature performing the part allotted it in the universal drama; that seeing, he might understand, and understanding, adore, its Supreme Author and Director.—Bishop Horne.

PEVENSEY CASTLE.



RUINS OF PEVENSEY CASTLE.

. . . . By degrees the Saxon empire sank,
Then set entire in Hastings' bloody field.
Compendious war! (on Britain's glory bent,
So fate ordained) in that decisive day,
The haughty Norman seized at once an isle,
For which, through many a century, in vain,
The Roman, Saxon, Dane, had toiled and bled:
Of Gothic nations this the final burst;
And, mixed the genius of these people all,
Their virtues mixed in one exalted stream,
Here the rich tide of English blood grew full.—THOMSON.

THE venerable ruins of Pevensey Castle, in Sussex, form an impressive memorial of that stormy period when the Normans succeeded the Saxons in the government of Britain. It was here that William of Normandy landed, nearly eight centuries ago, and within a few miles is the spot where the decisive battle was fought between him and Harold the Saxon. Let us endeavour to present the broad features of this momentous struggle in a brief and popular form.

About the year 1040, after a temporary possession of power by the Danes, Edward, surnamed the Confessor, of the Saxon lineage, was chosen king of England. He was childless, and long before his death many were the discussions and speculations as to who should succeed him. William, the duke of Normandy, who was Edward's cousin,—Earl Harold, an ambitious noble, whose sister Edward had married,—and Edgar Atheling, the real descendant of the Saxon kings who had been displaced by the Danes,—all became objects of interest in this respect. Edward, as he grew older, showed a vacillating character, which proved the cause of much subsequent misery to his kingdom. About the year 1060 he determined that William should succeed him; then he changed his mind, and devised in favour of the Atheling; then he again wavered, and sent Harold over to Normandy, to inform William of his final determination in his favour. William, knowing the influence of Harold in England, endeavoured to secure his friendship and support, and, outwardly at least, succeeded. But Harold was an ambitious man, and left no measure untried which promised to increase his power, whether legally or not.

At length, in the beginning of the year 1066, Edward approached his end, and Harold seems now to have imbibed hopes of the sovereignty. Accompanied by a few adherents, he found his way into the apartment of the dying monarch, whom he questioned as to the appointment of a successor. "Ye know full well, my lords," said the now feeble king, "that I have bequeathed my kingdom to the Duke of Normandy, and are there not those *here* whose oaths have been given to secure his succession?" alluding to a kind of oath of fealty which Harold had taken towards William. But Harold renewed his importunities, and the sick and wearied monarch replied, "Harold, take the kingdom, if such be thy wish, but the gift will be thy ruin. Against the duke and his barons no power of thine can avail." Harold replied that he feared no enemies, and the king, shortly before he breathed his last, as if worn out by these cravings for power, said, with a sort of pettish weakness, that the English might have Harold, or any one they pleased, for their king.

Such was the mode, according to one account, in which Harold acquired his equivocal claim to the English throne, and collateral circumstances do not throw any discredit on the account. Sir F. Palgrave shows how strikingly the circumstances resemble the scenes which often occur at the death-bed of a wealthy but weak-minded man.

The childless owner of a large estate, (says he,) at first leaves his property to his cousin on the mother's side, from whose connexions he has received much kindness. He advances in age, and alters his intentions in favour of a nephew on his father's side, an amiable young man living abroad, and from whom he had been estranged in consequence of a family quarrel of long standing. The young heir comes to the testator's house, is received with great affection, and is suddenly cut off by illness. The testator then returns to his will in favour of his cousin, who resides abroad. His acute and active brother-in-law has taken the management of his affairs, is well informed of this will, and when the testator is on his death-bed, he contrives to tease and persuade the dying man to alter the will again in

his favour. This is exactly the state of the case; and though considerable doubts have been raised relating to the contradictory bequests of the Confessor, there can be no difficulty in admitting that the conflicting pretensions of William and Harold were grounded upon the acts emanating from a wavering and feeble mind. If such disputes take place between private individuals, they are decided by a Court of Justice, but if they concern a kingdom they can only be settled by the sword.

This familiar way of illustrating the subject is particularly calculated to impress its main features on the mind.

No sooner was Edward dead than Harold took prompt measures to seize the vacated throne. William was abroad; Atheling was youthful, timid, and poor; Harold was at hand, bold, and aspiring; and the nobles, partly by force, partly by entreaty, conferred the crown on Harold. But his tenure of sovereignty was brief. On the 6th of January, 1066, he assumed the crown, and on the 14th of October in the same year he terminated his career, after a troubled reign of a very few months. He contrived to embroil himself with one of his brothers who had joined the Norwegian king in a hostile attack on England, and on the very next day after Harold had defeated this brother in the north of England he heard that William of Normandy had landed, with a powerful force, at Pevensey, in Sussex.

William is said to have been hunting in his park at Rouen when intelligence was brought him that Edward was dead, and that Harold, in despite of his oath of fealty, had seized the vacant sceptre of England. For a time he was as one stunned by the suddenness of the announcement, and it was not until some of his nobles had aroused him that he could form any decided plan of action. As, however, there seemed to be a general impression in his court that the claim of William to the English crown was founded on a legitimate gift from the deceased monarch, the nobles lent their assistance to him in his project to dispossess Harold. The times in which these events took place were feudal times, in which nobles held their possessions under a contract to fight for the king whenever he should require their services, and in which the vassals or retainers accompanied a noble to battle in return for the protection which they received from him. Under such circumstances there was no national army, for the retainers of any noble, who formed the real fighting soldiery, were ordered not by their king but by their lord, and consequently a king had to obtain the support of his nobles before he could command the personal services of the vassals belonging to them. This feudal service was, however, by agreement confined to the soil of their birth, and William found that he could not obtain the services of his nobles in an invasion of England, without promising them large rewards in the shape of possessions in the conquered country. This was a very important feature in the transaction, and one which may be deemed the principal cause of the tenure of land in England at the present day. Many of our noblemen can trace back their titles and estates to the time of the Conquest, when their ancestors received them in lieu of services rendered to the Conqueror.

While William was making these preparations Harold was preparing for defence on the southern coast of England, but at the time when the attack was actually made Harold was in the north of England. He was informed by a messenger, who had travelled with the utmost speed, that William had crossed the Channel with seven hundred ships and boats (some say three thousand) and had effected a landing with his army at Pevensey.

On September 29th, 1066, this memorable landing was effected. The war-horses, the archers, the knights, the standard-bearers, the duke himself,—all landed in safety, and almost without opposition. William occupied an ancient Roman castle, at Pevensey, and exhorted his troops to prepare for the coming contest. He rendered all his vessels unserviceable, in order that no idea of escape might enter into the minds of his soldiers, and took every opportunity to cheer them to their approaching duties. He is said to have stumbled when he first put his foot upon English ground: a soldier said, "*Mal signe est ci:*" "No," cried William, showing a clod of earth in his hand, "I have taken possession of the country."

To meet troops thus prepared for him Harold hastened from the north. He stopped a short time at London, to collect his forces, and then hastened onward to Sussex. Some fruitless attempts are said to have been made at negotiation, for it was evident to each of the chieftains that they had respectively ventured their whole fortunes on the cast of the die, and before engaging in a conflict which must prove fatal to one of them, they made an attempt to avoid the danger. The attempt was, however, unsuccessful: each asked more than the other could or would concede, and nothing remained but to settle the struggle by the sword. When it was evident that battle was inevitable the two armies passed the intervening night in a very different manner, Harold's army indulged in riot and debauchery, the 'Wæs-heal' and 'Drink-heal' resounding from the tents, whereas William's army spent the time in responding the Litany and chanting psalms.

The next day, the 14th of October, saw the two armies pitted against each other. The English were fortified in their position by lines of trenches and palisadoes, and within these defences they were marshalled, shield against shield, presenting an impenetrable front to the enemy. The men of Kent formed the van-guard. The burgesses of London claimed the honour of being the royal body-guard, and were drawn up around the standard, at the foot of which stood Harold, his two brothers, and the bravest of his nobles.

The English stood to meet the attack of the Normans. William Fitzosborn and Roger Montgomery led the first division; Almeric of Thouars and Alan Fergaut, the second; while William led on the third division in person, having before him his minstrel, Taillefer, who loudly sang the lay of Charlemagne and Roland, and the mighty deeds of the Paladins. The three divisions, thus marshalled, attacked, nearly simultaneously, three different parts of the English force, and a fearful slaughter commenced.

It forms no part of our object to detail the events of the battle—the attack and counter-attack—the fierce struggles for commanding positions—the alternate yielding and rallying of each party the incessant exertions of the two leaders to keep their adherents in a state of excited enthusiasm. Suffice it to say that, after Harold had been wounded in the eye by an arrow, and borne from his horse, the discomfiture of his troops became evident, and the night closed in with victory on the side of William. From that hour he became in effect, and soon after formally, king of England, and his barons received the broad lands of the conquered country as a reward for their exertions in the day of battle.

As to the real fate of Harold, a curious uncertainty exists. One of the early chroniclers states that William surrendered the dead body of the defeated monarch to Githa, Harold's mother, who caused it to be buried in the abbey of the Holy Cross. Another writer says that a body, of which the features were undistinguishable, but supposed to be those of Harold, was found between the corpses of his two brothers, and that William caused this corpse to be buried in the sands of the sea-shore, accompanying his directions with the words, "Let him guard the coast which he so madly occupied," and refusing to Githa the purchase of the body by its weight in gold. A third account, furnished by the monks of Waltham Abbey, to which Harold had been a great benefactor, states that the Conqueror having given to

some of the monks permission to search the field for the dead body of Harold, they sought among the loathsome heaps of the unburied, but sought in vain: they then obtained the aid of Editha, one whom Harold had tenderly loved, to search with them: she selected a ghastly and mutilated corpse as that of Harold, and had it entombed in Waltham Abbey.

There were those, however, who denied that Harold fell on that memorable day. Years after this event, when the Norman yoke was firmly and oppressively established in England, a decrepit hermit inhabited a cell near the Abbey of St. John, at Chester. Henry the First once visited the scarred, half-blinded, and recluse old man, and is said to have heard from the hermit himself that he was Harold, who had been secretly conveyed from the field of battle to a castle on the coast, and from thence to the place of his seclusion. Sir Francis Palgrave, after noticing the various accounts given of the fate of Harold, says:

If we compare the different narratives concerning the inhumation of Harold we shall find the most remarkable discrepancies. It is evident that the circumstances were not accurately known, and since those ancient writers who were best informed cannot be reconciled to each other, the escape of Harold, if admitted, would solve the difficulty. I am not prepared to maintain that the authenticity of this story cannot be impugned, but it may be remarked that the tale, though romantic, is not incredible, and that the circumstances may be easily reconciled to probability. There were no walls to be scaled, no fosse to be crossed, no warder to be eluded; and the examples of those who have survived after encountering much greater perils are so very numerous and familiar, that the incidents which I have narrated would hardly give rise to a doubt if they referred to any other personage than a king.

A word or two respecting the castle at Pevensey. The spot where the battle took place is that which is now known as Battle, a few miles from Hastings and from Pevensey. Harold's standard was torn at the end of the conflict, William's planted in its place, and a splendid abbey afterwards built on the spot, in commemoration of the victory, the high altar occupying the precise place at which the standard had been planted. On William's accession to the throne he presented the manor of Pevensey (called by the Saxons *Peowensea*, and by the Normans *Pevensil*) to his half-brother, Earl Robert, who fortified it with the noble castle, now in ruins, and which was probably formed on the ruins of the ancient Roman castle. The remains are situated on a craggy steep, commanding a beautiful view of the adjacent country. The external walls are circular, and inclose an area of seven acres, being, together with the towers, tolerably entire for the height of twenty-five feet. They display throughout abundance of Roman bricks, which furnish corroborative evidence of the previous existence of a Roman fortification on that site.

BIOGRAPHICAL MEMOIR OF DR. THOMAS YOUNG.

II.

On his return to England, Young entered himself of Emmanuel College, Cambridge, of which Dr. Farmer, an intimate of his uncle, was then master. There he took his regular degrees in physic, but did not attend any of the public lectures. He contented himself with pursuing in private the various studies in which he was engaged, cultivating the intimacy of the most highly-gifted members of the university, and discussing subjects of science with the professors. In these engagements he passed the time of his residence at college, finding no rival in the variety of his knowledge, and few competitors in some of its branches.

At the death of his uncle, Dr. Brocklesby, in 1797, Dr. Young came into possession of the house, books, pictures, and part of the fortune of that gentleman. He now found himself in circumstances of independence, and surrounded by distinguished and valuable friends, whose intimacy he continued to prize and enjoy through life. On leaving Cambridge he settled as a physician in London, in Welbeck Street, where he continued to reside during twenty-five years.

In 1801, Dr. Young was appointed Professor of Natural Philosophy in the Royal Institution, and during two years he continued to lecture alternately with Sir Humphrey Davy. As a lecturer, he was not eminently successful, for though his lectures were full of striking and original matter, he was not happy in the mode of conveying his ideas, so as to suit the capacities of a mixed audience. He was always compressed and laconic, and seemed to think his audience better instructed than such an assembly could possibly be, in the abstruse points on which he delighted to dwell; it is even said that men of science could not follow him without considerable difficulty. Even as a lecturer on the Practice of Medicine at St. George's Hospital, he was by no means popular. Arago suggests, that his want of success may perhaps in justice be attributed to the frequent opportunities he took of pointing out the inextricable difficulties which are met with at each step in studying the numerous diseases to which the human frame is liable. Those among the faculty who wished to attain their knowledge rapidly, and with as little labour as possible, must needs have felt discouraged by such language as Young was constantly making use of,—for instance when he said—"No study is so complicated as that of medicine; it exceeds the bounds of human intelligence. Physicians who act precipitately, without attempting to comprehend what they observe, are often as much in error as those who constantly generalize from observations which are not analogical." Or, "In the *lottery* of medicine, the chances of the possessor of ten tickets are evidently greater than those of the person who has only five."

The extent of Dr. Young's knowledge appears to have had an effect that was unfavourable to his practice as a medical man. He was undecided, and wanting in confidence at the sick-bed. Remarkably distinguished for boldness in his scientific views in general, he was yet so well aware of the prejudicial effects which might eventually result from the action of the best medicines, that he appeared to balance these against the favourable chances which might be expected, and this at a time when decisive measures were called for. The same timidity was displayed in all his medical works.

He was scarcely convinced, (says Arago,) of the soundness of his own arguments, when he attacked the celebrated Dr. Radcliffe, whose whole secret in a brilliant and successful practice, was, as he himself declared, the employment of contrary remedies, or when he contended with Dr. Brown, who found himself under the painful necessity of acknowledging from the evidence of the official documents of a fever hospital, that the majority of fevers, when left to themselves, are neither more severe, nor of longer duration, than when they are treated by the best methods.

In 1802, Dr. Young published his *Syllabus*, a course of Lectures on Natural and Experimental Philosophy, with mathematical demonstrations of the most important theorems in Mechanics and Optics; in the same year he accompanied the Duke of Richmond and his brother, Lord G. Lennox, in his medical capacity, to Rouen, and in an excursion to Paris where he was first present at the National Institute, at that time attended by Napoleon. There he made the acquaintance of several of the leading members of that distinguished body, into which he was himself eventually elected. On his return he was constituted Foreign Secretary to the Royal Society, an office which he maintained during life. In 1804 he married Eliza, daughter of J. P. Maxwell, Esq., of Cavendish Square,—an union productive of uninter-

rupted happiness for the remainder of his life. At this time it was Dr. Young's resolution to confine himself for the most part to medical studies, and to make himself known to the public in no other character. But he had resolved on that which to him was impossible. He never slackened in his literary and philosophical exertions. He was always ready to lend his aid to any one engaged in similar investigations. He was living in the first circles in London, and his avocations could not be concealed; therefore it is conceived that in putting forth his non-medical papers separately and anonymously, he was making a fruitless as well as voluntary sacrifice of the general celebrity to which he was entitled. From an impression that it would be likely to interfere with his success as a medical practitioner, he likewise resigned his professorship in the Royal Institution. In his anonymous publications, however, the veil was very transparent Two contiguous letters of a Latin motto, in a regular order, formed the signature to each paper, but Young communicated the Latin words to all his friends; and few were ignorant of the real nature of his pursuits.

In 1807, Dr. Young published his Course of Lectures on Natural Philosophy and the Mechanic Arts, in two quarto volumes, each consisting of eight or nine hundred pages, where every branch of natural philosophy was treated in a new and profound manner. It is said of this work, that it contains the original hints of more things since claimed as discoveries, than can perhaps be found in a single production of any known author. On this occasion Dr. Young forgot his former precautions, and gave his name to the publication. We cannot give even the titles of all the numerous works which Dr. Young published, but the mention of only a few of them will show how diversified were his researches.—Memoir on Iron Furnaces. Essays on Music and Painting. Researches into the habits of Spiders. On the Stability of the Arches of Bridges. On the Atmosphere of the Moon. The Mathematical Theory of Epicycloidal Curves. Restitution and Translation of different Greek Inscriptions. On the Means of strengthening the Timber-work of Wooden Vessels. On the Action of the Heart and Arteries in the Phenomenon of Circulation. Theory of the Tides. On the Diseases of the chest. On Friction in the Axes of Machines. On the yellow Fever. On the Calculation of Eclipses. Essays on Grammar:—&c. Such a variety of elaborate works seem sufficient to have shut up their author in his study; but, on the contrary, he was to be found in the most brilliant circles in London, delighting his friends with the accomplishments of his mind, and the elegance of his manners. He was a true living library, where an exact, precise, and substantial answer could be given in an instant to every kind of question which could be proposed.

In the year 1814, the studies of Dr. Young were directed to a subject, which has added greatly to his fame, although it has led to much controversy. It was at this time that he began to investigate the lost literature of Ancient Egypt, and discovered the key to the hieroglyphics.

In the year 1814, (says his biographer,) Sir William Rouse Boughton had brought with him from Egypt, some fragments of papyri, which he put into the hands of Dr. Young, the fragment of the Rosetta Stone having about this time been placed in the British Museum, and a correct copy of its three inscriptions having been engraved and circulated by the Society of Antiquaries. Dr. Young first proceeded to examine the enchorial inscriptions, and afterwards the sacred characters, and after a minute comparison of these documents he was enabled to attach some Remarks on Egyptian Papyri, and on the Inscription of Rosetta, containing an interpretation of the principal parts of both the Egyptian inscriptions on the pillar, to a paper of Sir W. Boughton's, published by the Society of Antiquaries, 1815, in the eighteenth volume of the *Archæologia*.

He continued to prosecute these researches with almost incredible toil and activity. In 1815 he wrote on the subject in the *Museum Criticum*, and in 1816 published two letters announcing the progress of the discovery of the relation between the Egyptian character and hieroglyphics, forming the basis of his own inquiries, as well as of the system carried further in its details by M. Champollion, whose attention had long been directed to similar studies.

The whole results of his labours on this subject were first brought out in a complete form in the article Egypt of *Encyclopædia Britannica*, to which Dr. Young furnished sixty-three articles, scientific, biographical, and literary. In 1817 he paid a second visit to Paris, and renewed his intercourse with Humboldt, Arago, Cuvier and Gay Lussac. In 1818 he was appointed one of the commissioners for considering the state of the weights and measures of Great Britain. In the same year he became Secretary to the Board of Longitude, with the charge of the supervision of the *Nautical Almanac*. This latter appointment was to him a desirable one, and henceforth he had no anxiety to increase his medical practice. In the summer of 1819 he made a hasty tour of Italy, and examined the Egyptian monuments preserved in that country, returning to England by way of Switzerland and the Rhine. In 1821 he made an excursion to Spa and Holland, and in the same year undertook the medical responsibility and mathematical direction of a society for life assurance. This led him into researches in which he took great interest, and produced his Formula for expressing the Decrement of Human Life, &c. In 1823 he again visited Paris, and also published an account of his Hieroglyphical Discoveries. In 1825 he removed from Welbeck Street to a house which he had built in Park Square, Regent's Park, where he continued his favourite pursuits, and expressed himself as having attained the main objects of his desire in this life.

In the summer of 1828 he went to Geneva, and there appeared to suffer an unusual degree of fatigue on slight occasions, and symptoms of age came on him, which contrasted strongly with the freedom from complaints which he had hitherto enjoyed. During his absence the Board of Longitude was abolished, but in many departments of the Admiralty the assistance of men of science was found so indispensable, that a new council of three members was appointed, consisting of Dr. Young, Captain Sabine, and Mr. Faraday.

This change involved Dr. Young in more labour than he could perform without injury to his health, and is thought to have aggravated a complaint which must have been long, though insensibly in progress, and which was now bringing him rapidly to a state of extreme debility. From the month of February, 1829, his illness continued with slight variations till the 10th of May following, when he expired without a struggle, having hardly completed his fifty-sixth year. "His disease proved to be ossification of the aorta, and every appearance of advanced age, not brought on probably by the natural course of time, nor even by constitutional formation, but by unwearied and incessant labour of the mind from the earliest days of infancy." His remains were deposited in Farnborough Church, Kent. Of his acquirements in almost every department of human knowledge, we have endeavoured to give some faint idea; it only remains to add the testimony of his biographer, that in all the relations of private life, Dr. Young was an exemplary character, and his whole career was one of usefulness, and moral rectitude.

LONDON:
JOHN WILLIAM PARKER, WEST STRAND.
Published in Weekly Numbers, Price One Penny, and in Monthly Parts, Price Sixpence.
Sold by all Booksellers and Newsvenders in the Kingdom.

THE

Saturday Magazine.

Nº. 598. OCTOBER 30TH, 1841. {PRICE ONE PENNY.

THE CITY OF DRESDEN.

DRESDEN.

THE kingdom of Saxony, which forms part of confederate Germany, has for its capital, the ancient town of DRESDEN. The Elbe divides the city into two portions, which are connected by a fine bridge, 552 feet long, with 16 arches. The country round has a mixture of romantic nature with the richest cultivation; so that the environs of this city are reputed to be more delightful than those of any other capital of Europe. The approach to the city is on almost all sides by avenues shaded by trees. It stands in a fine plain, which is, for the most part, surrounded by eminences covered with trees, vineyards, or gardens. The sweetness and amenity of its aspect have acquired for it the epithet of the "German Florence."

The heights of Kesselsdorf, in the vicinity of Dresden, were celebrated as the scene of some important battles in the early part of the last century, during which the city suffered severely. The important situation of the city caused a fort to be built there as early as the ninth century. The city was bombarded for nine days by Frederick the Great, in 1760; and it has been exposed to the devastations of war upon other occasions. The Austrians occupied the city in 1809, without injuring it. In the following year they began to pull down the fortifications, but desisted on the breaking out of the Russian war. To the historian, however, Dresden will present its most remarkable feature in being the centre of operations, in 1813, in the great and important contests, when almost all the powers of Europe were arrayed against Napoleon. Besides the political importance of Dresden, as a capital, the possession of the Elbe, by means of some of the most important fortresses, was another motive, which induced Napoleon to place himself with his whole army on the banks of this river; and the entire neighbourhood resembled a great fortified camp, from which he could pour forth his columns, with equal ease, on the chief cities around. The Emperor displayed the most consummate skill in the defences of the city, as a military post. At the final retreat of the French, Dresden received a strong Russian garrison and became the seat of the Russian administration under Prince Repnin. The king of Saxony was twenty months a prisoner of the Allied Powers, and his dominions were then governed by Russian and Prussian authorities. The adherence of this king to the fortunes of Napoleon, though rare and admirable as an instance of political integrity, was disastrous to himself and his monarchy; his dominions were dismembered by the congress of Vienna, and the northern and eastern parts of his territory transferred to Prussia.

When the French retreated from Dresden to Leipsic in 1813, they blew up the central part of the bridge over the Elbe, which was repaired at the expense of the Emperor of Russia.

Dresden has very little external trade or manufacture. It is a place of transit for foreign produce, and has several fairs during the year. The manufactures of mathematical, mechanical, and musical instruments have arrived at some celebrity in this place; together with several other arts and trades; such as the making of porcelain, earthenware, lace, mirrors, and plaited straw. There is a foundry for bomb-shells and cannon, and another for bells: there is also a yearly exhibition of Saxon manufactures. The municipal expenses amount to nearly 7000*l.* a year, and the population may be reckoned at 60,000 souls. As a town, answering to the uses and conveniences of life, this place has been much improved since the war, by the levelling of the fortifications;

whereby the space gained has been used for gardens, promenades, and new buildings.

Excepting the people of Vienna, the capital of Austria, no people of Germany are so fond of being out of doors as the Saxons of Dresden, and no other capital displays so many temptations to allure them; wood and water, mountain and plain, precipice and valley, corn and wine, palace and cottage, seem tossed together in bright confusion, and glowing in a climate, which, north of the Alps, may well be called genial. The rising ground to he south-east of the city, which was the principal scene of the combats and bombardments that terminated in the retreat of the French to Leipsic, is the only part of the environs at all devoid of natural sweetness and beauty.

As the season of Spring comes on, strangers visit Dresden from all parts of Europe; and this city, with its fine sky and scenery, becomes for a great part of the year the general rendezvous of Germany.

One of the especial sources of attraction for visitors at Dresden is its fine collection of pictures. Hence it has acquired the reputation of being the centre of the arts in Germany. No gallery on this side of the Alps deserves, as a whole, to be placed above it: it is gratifying to find that these pictures have had the rare fortune to be treated with reverence by every hostile hand. Frederick the Great, as we before remarked, battered down the churches of Dresden, and laid its streets in ruins, but he ordered his cannon and mortars to keep clear of the picture-gallery. He entered as a conqueror, levied the taxes, administered the government, and, with an affectation of humility, asked permission of the captive Electress to visit the Gallery as a stranger. Napoleon's policy likewise induced him to treat Saxony with great consideration, and he was careful to preserve the pictures unviolated. None of these went to Paris.

Crowds of copyists fill the gallery during the summer months. A sure and lucrative employment is found in making miniature copies of the more celebrated pictures, or individual groups or figures from them. Of the amateur artists many are ladies, and here the pride of rank, which in everything else in Germany is so unyielding, gives way. The countess pursues her task by the side of her more humble companion, who is copying for her daily bread, under the gaze of every strolling stranger. It is not at all uncommon to find ladies repairing to Dresden from distant capitals to spend part of the summer in copying pictures.

This city possesses likewise one of the most complete collections of copper-plates in Europe. This collection contains everything that is interesting in the history of the art, or valuable for practical excellence. It possesses the earliest copper-plate yet known, bearing the date of 1466. A vast quantity of ancient sculptures, and casts in gypsum of other great works, which could not be bought, completes the Saxon school of arts.

Amongst the curiosities of Dresden we must not pass over the treasures of the "Green Vault," of which every Saxon is so proud. Whoever takes pleasure in the glitter of precious stones, and in gold and silver, wrought not only into royal ornaments, but into every form that art can give them, will find much delight in strolling through the apartments of this gorgeous toy-shop. Here are the crowns, jewels, and regal attire of the Saxon princes for ages back. Pearls, and innumerable carvings in ivory are here, and jewelled nick-nacks of all sorts and sizes.

There is also the armoury for ancient weapons, all so complete with reference to the middle ages, that were Europe thrown back by the word of an enchanter, to those times, Saxony could take the field with a duly equipped army sooner than any other power. This place is therefore just what a well-stored armoury must have been in the days of yore. Among the relics kept here is the first instrument with which Schwarz tried his newly invented gunpowder. The fire is produced by friction. A small bar of iron placed parallel to the barrel is moved rapidly backwards and forwards by the hand: above it is a flint, whose edge is pressed firmly against the upper surface of the bar by a spring: the friction of the flint against the bar strikes out the fire, which falls upon the powder in a small pan beneath.

One of the least pleasing features of this gay and elegant capital is the number of condemned malefactors employed in cleaning the streets, fettered by the leg, and kept to their labour by the rod of an overseer and the muskets of sentinels. When not so employed their time is spent in a miserable and corrupting confinement, in dungeons always loathsome, and sometimes subterraneous. Some of the German lecturers on political economy rail at the bad management of English prisons, without seeming to look to faults nearer home, which if, correctly narrated by travellers, are discreditable to any European country.

One thing which attracts the early curiosity of visitors at Dresden, is the custom of young lads singing psalms on Sundays and feast days about the town. Pious men have bequeathed funds to give a number of boys, who are at the same time choristers of the different churches, a cocked hat, a black scarf, and a suit of clothes, on condition of their entertaining the inhabitants with sacred music. Bands of ten or a dozen, with one for a leader, each dressed in black, with a cocked hat and scarf, march slowly about the town, and stopping at every second or third house, sing a psalm. This singing is often very agreeable: the shrill clear voices of the young people, sounding through the streets, have something of simplicity, which oftentimes pleases as much as the multiplied tones and warblings of the royal orchestra.

THE EMIGRANTS' FIRST SABBATH IN AFRICA.

IT was, indeed, an affecting sight, to look round on our little band of Scottish emigrants, thus congregated for the first time to worship God in the wild glen allotted for their future home, and the heritage of their offspring. There sat, with his silvery locks, the aged patriarch of the party, with his Bible on his knee—a picture of the high-principled, grave, Scottish husbandman; his respectable family seated around him. There was the widow, with her meek, kind, and quiet look—the look of one who had seen better days, but who, in adversity, had found pious resignation—with her three stalwart sons, and her young maiden daughter, placed beside her on the grass. There, too, were others, delicate females—one of them very nearly related to myself—of whom I need not more particularly speak. There was the younger brother of a Scottish laird, rich in blood, but poor in fortune, who, with an estimable pride, had preferred a farm in South Africa to dependance on aristocratic connections at home. Looking round on these collected groups, on this day of solemn assemblage, such reflections as the following irresistibly crowded on my mind:—"Have I led forth from their native homes, to this remote corner of the globe, all these my friends and relatives, for good or for evil!—to perish miserably in the wilderness, or to become the honoured founders of a prosperous settlement, destined to extend the benefits of civilization and the blessed light of the Gospel through this dark nook of benighted Africa?" The issue of our enterprise is known only to Him who ordereth all things well. Having selected one of the hymns of our national church, all united in singing it to one of the old pathetic melodies of our native land. The day was bright and still, and the voice of psalms rose with a sweet and touching solemnity among those wild mountains where the praise of the true God had never, in all human probability, been sung before. We then read some of the most suitable portions of the English Liturgy, and concluded with an excellent discourse from a volume of sermons presented to me on parting by the Rev. Dr. Pringle, of Perth. We had a similar service in the afternoon. While we were singing our last psalm, an antelope stood for a little while on the opposite side of the rivulet, gazing at us with innocent amazement. — PRINGLE'S *African Sketches.*

OPTICAL ILLUSIONS. VII.

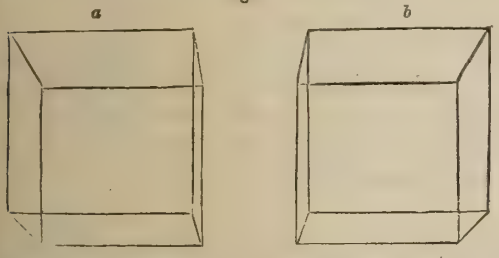
On Binocular Vision.

We now invite the reader's attention to a very curious class of optical illusions, connected with the use of *two* eyes in the process of vision. Under the ordinary sense of the word illusion, it is not usual to apply such a term to the act of seeing; but in fact it is one of the most beautiful of all illusions, viz., the impression on the mind, that two distinct acts of vision, one by each eye, form but one act.

Opticians and anatomists have frequently asked, "Why does not vision with two eyes produce in the mind the idea of a double object? How can single vision result from the use of *two* eyes at once?" It is known that an image of the object is impressed on the retina of each eye; and it appears natural to suppose that the mind would thence recognise two objects instead of one, whenever we look with both eyes at once. This, however, is not the case; and numerous theories have been formed to account for the illusion. Of all these theories that proposed by Professor Wheatstone is the only one which seems to meet all the difficulties of the case. We are strongly disposed to think that it is the correct explanation; and we will endeavour to give a popular sketch of that gentleman's views, as presented in a paper read before the Royal Society three or four years ago.

Professor Wheatstone grounds his explanation upon this proposition,—That in all the ordinary cases of vision with two eyes, the effect produced upon the mind is *compounded* of the two effects which would be produced by each eye separately. Hitherto, inquirers on this subject have been in the habit of assuming that an object presents the same appearance to one eye as to the other; but Mr. Wheatstone's explanation is greatly dependant on the curious fact that the appearance of an object is *not* precisely the same to the two eyes. To shew the nature of the difference, place a small cube immediately in front of the eyes, and at about seven inches' distance from them; shut each eye in succession, and look with the other; the cube will not present the same shape to each eye, but will appear as *a* in the one instance, and *b* in the other, in Fig. 1. They are slightly dissimilar, and this dissimilarity increases as the optic axes

Fig. 1.



converge more rapidly, or, which is the same thing, as the object is viewed at a smaller distance. Supposing the cube to be small—a die for instance—it will be seen on a little attention, that the difference arises from the circumstance, that with the right eye we can see a little of the right *side* of the cube, but not the left side; while with the left eye we see a little of the left side of the cube, and none of the right.

Mr. Wheatstone supposes that our ideas of objects placed at a moderate distance, are formed from the combination of these two images superposed as it were in the mind; and that the chief reason why we do not mistake a picture, however cleverly painted, for the object which it is intended to represent, is, that the image of a picture is exactly the same in both eyes, since the picture does not present *sides* or *bulk*, but only a flat surface; whereas the image of an object is different in the two eyes. When an object is viewed from afar, the same difference does not exist, and a consequence results which we will state in Mr. Wheatstone's own words:—

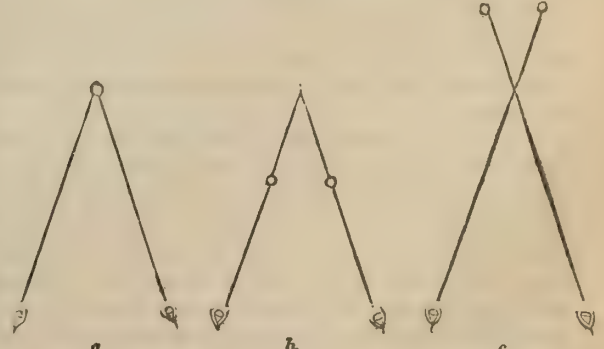
When an object is viewed at so great a distance that the optic axes of both eyes are sensibly parallel when directed towards it, the perspective projections of it, seen by each eye separately, are similar, and the appearance to the two eyes is precisely the same as when the object is seen by one eye only. There is in such case, no difference between the visual appearance of an object in relief, and its perspective projection on a plane surface; and hence pictorial representations of distant objects, when those circumstances which would prevent or disturb the illusion are carefully excluded may be rendered such perfect resemblances of the objects they are intended to represent, as to be mistaken for them; the Diorama is an instance of this. But this similarity no longer exists when the object is placed so near the eyes that to view it the optic axes must converge; under these conditions a different perspective projection of it is seen by each eye, and these perspectives are more dissimilar as the convergence of the optic axes becomes greater.

It will be convenient to give the name of *right image* to the appearance which an object presents when viewed by the right eye, and *left image* to the appearance presented to the left eye. We may then state that in all pictures, the right and left images are alike; that in objects seen from a great distance, the images are so nearly alike that we cannot discern any difference between them; that in objects seen at a short distance, the images are decidedly dissimilar: and that the illusive effects of pictures depend greatly on the distance of the objects which they are intended to represent. A picture of a near solid object *cannot* be made to represent exactly the appearance of the object itself, however consummate may be the skill of the painter; for the right and left images of his picture are similar, while those of the object are dissimilar. The mind does not accustom itself to the image presented by either eye singly, but to both together superposed or combined; consequently a combination of two similar images (the ordinary vision of a picture) cannot exactly resemble a combination of two dissimilar images (the ordinary vision of a solid object).

Mr. Wheatstone states, that no former writer seems to have been aware of this subject, with the exception of the great painter Leonardo da Vinci, who explains why a painter could not represent a small object exactly as it is seen by the eye, because the portion seen by one eye is not the same as that seen by the other. But Da Vinci failed to follow out the fact to its singular consequences.

A very curious question now presents itself. If the right and left images of an object are dissimilar, and a picture fails to be completely illusive because its right and left images are similar, what would result if we place before the eyes two pictures at the same time, one representing the right image, and the other the left image, of any given object? To the solution of this question Mr. Wheatstone directed his attention. It is necessary to make the images of the two pictures fall on similar parts of the two retinæ; and fig. 2. will shew how this may be done in a simple way. Under the ordinary circumstances of vision, the object is seen at the point where the two

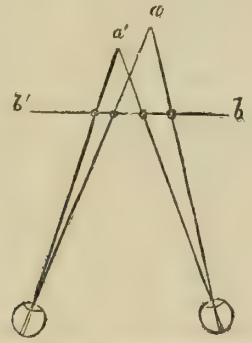
Fig. 2



axes meet; but two objects may be seen as one, if they are placed one in the direction of each optic axis, at equal distances before or behind their intersection. In all the three cases (fig. 2, *a. b. c.*) the mind recognises but one object. As unpractised persons, however, find it difficult to focalize the eyes properly, Mr. Wheatstone recommends the employment of a pair of tubes, capable of being inclined towards each other at various angles, so as to correspond with different convergences of the optic axes. By the use of such tubes, or by the naked eyes with a little practice, a person might make two objects appear as one, if similarly situated with respect to the converging point of the two optic axes.

Now, if the two objects thus placed, instead of being exactly similar, were perspective projections of the same solid object, the mind will still continue to perceive the object to be single; but instead of a representation on a plane surface, as each drawing appears to be when separately viewed by that eye which is directed towards it, the observer will perceive a figure of three dimensions, the exact counterpart of the object from which the drawings were made. These effects may be illustrated by one or two instances:—If two vertical lines near each other, but at different distances from the spectator, be regarded first with one eye, and then with the other, the distance between them when referred to the same plane will appear different; if the left hand line be nearer to the eyes, the distance as seen by the left eye will be less than the distance as seen by the right. This is exemplified in fig. 3, where $a'a$ represent the positions

Fig. 3.



occupied by the two lines; and the points on the cross section b b shew the relative distances at which they *appear* apart when seen by the two eyes separately. Now if the lines here spoken of were drawn on two pieces of card, at the respective distances at which they appear to each eye, and these cards be afterwards viewed by the aid of the tubes above alluded to, the observer will no longer see two lines on a plane surface; but two lines will appear, one nearer to him than the other, precisely as the original vertical lines themselves. Again, if a straight line be held before the eyes in such a position that one of its ends shall be nearer to the observer than the other is, each eye, separately referring it to a plane perpendicular to the common axis, will see a line differently inclined; and if lines, having the same apparent inclinations, be drawn on two pieces of card, and be presented to the eyes as before directed, the real position of the original line will be correctly perceived by the mind.

Mr. Wheatstone traces all these effects to the same source as that whence arises a curious appearance observed when a plate of metal, whose surface has been turned on a lathe, is viewed by candle-light. When a single candle is brought near such a plate, a line of light appears standing out from it, one half being above, and the other half below, the surface; the position and inclination of the line changing with the position of the light and the observer, but always passing through the centre of the plate. On closing the left eye the relief disappears, and the luminous line coincides with one of the diameters of the plate; on closing the right eye the line appears equally in the plane of the surface, but coincides with another diameter; on opening both eyes, it instantly starts into relief. The luminous line here spoken of results from the reflection of light from the minutely depressed concentric circles produced by the tool in the operation of turning. The Professor remarks that this appearance must have been observed by many persons, but that none had thought of referring it to its cause; which is exactly analogous to that of the vision of two inclined lines, when each is presented to a different eye focalized in the manner before described.

The difficulty of effecting this focalization with exactness led Mr. Wheatstone to construct a very ingenious instrument called a *stereoscope*, the arrangement and employment of which we shall describe in our next paper on this subject.

"FIFTEEN YEARS AGO."

Oh! tis but "fifteen years ago,"
(How the years fleet fast away!)
That I heard the winds of Autumn blow,
As I hear their voice to-day;

And saw,—as now they meet mine eye—
The bleak trees, stripped and bare,
Lift up their wild arms to the sky,
Like mourners in despair;—

While the leaves—like the hopes of the mourner—dead,
Bestrewed the withered earth;
And I looked on the desolate scene, and said,
With a sorrow akin to mirth,

"I love the pomp of the dying year,"—
And gazed, as oft a child
Hath gazed, they tell us, on a bier,
And then, unconscious, smiled.

What then were the sky and the earth to me,
In their places, foul or fair?
My heart was young, and I thought there would be
Eternal summer there.

But now, as life with the rolling wave
Of each rapid year sweeps on,
All the buoyant swell of hope, that gave
My spirit strength, is gone.

Like the earth and the sky, I seem to bear
Each change the seasons bring;
But oh! I ne'er can hope to share
With them another spring.

Decay for all things!—all alas!—
Now fifteen years have flown—
Reflect, as mirrored in a glass,
An emblem of mine own.

My spring is gone; my summer's sun
Wears Autumn's sombred glow—
Oh! it was not thus my verse had run
But "fifteen years ago."——J. S. B.

Thomas Curson, born in Allhallows, Lombard-street, armourer, dwelt without Bishopgate. It happened that a stage-player borrowed a rusty musket, which had long lain leger in his shop: now though his part were comical, he therewith acted an unexpected tragedy, killing one of the standers-by, the gun casually going off on the stage, which he suspected not to be charged. Oh! the difference of divers men in the tenderness of their consciences; some are scarce touched with a wound, whilst others are wounded with a touch therein. This poor armourer was highly afflicted therewith, though done against his will, yea without his knowledge, in his absence, by another, out of mere chance. Hereupon he resolved to give all his estate to pious uses: no sooner had he gotten a round sum, but presently he posted with it in his apron to the Court of Aldermen, and was in pain till by their direction he had settled it for the relief of the poor in his own and other parishes, and disposed of some hundreds of pounds accordingly, as I am credibly informed by the then churchwardens of the said parish. Thus as he conceived himself casually (though at a great distance) to have occasioned the death of one, he was the immediate and direct cause of giving a comfortable living to many.—Fuller.

ON CHESS. No. XX.

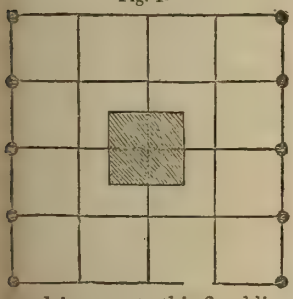
Ancient Games from which Chess is supposed to have been derived.

In two former articles we investigated the powers of the pieces, and endeavoured to afford an easy account of the various methods which have been adopted for obtaining those numerical values which are given to the pieces in elementary works on chess. We propose now to inquire how the pieces became invested with their present powers; and although our information on this subject is not very precise, yet it is sufficiently interesting to form part of the present series.

The Hindoo origin of chess, supported by Dr. Hyde, Sir William Jones, and others, was for a long time credited, until Mr. Christie proposed to consider "whether it be more natural to conceive the game to have been invented by an effort of the mind of one person, and devised, formed, and perfected at one instant of time; or whether it may not be considered probable, that some rude materials existed, which falling into the hands of ingenious and able workmen, at different periods, were variously fashioned by them, and united at last in the elegant structure of the modern game." We propose to give a brief analysis of Christie's attempt to prove "that a game of pastoral origin was already in general use, which being expanded as to the superficies of its *board*, and augmented in the number of its *men*, and varied in the properties of its pieces, might have been fashioned and completed by the ingenuity of the Orientals into the modern game of chess."

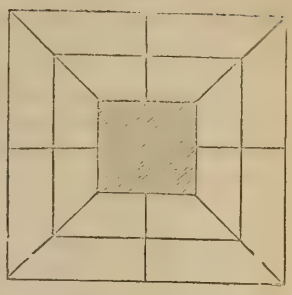
Among the ancient games of skill the one to which writers have referred the origin of chess is the πεττεια, or the game of the pebbles, supposed to have been invented by Palamedes at the siege of Troy. From scattered words and phrases in various Greek writers, it is probable that the game was played on a board containing sixteen squares with a central space called ἱερα γραμμη, the sacred barrier. The game was played by two persons, one being provided with five white pebbles and the other with five black pebbles, arranged at the beginning of the game as in the accompanying figure. Each player endeavoured to cut off, inclose, or block up, his adversary's men. In Constantine's *Lexicon* the "sacred barrier" is thus alluded to:— "The middle line was the extreme boundary beyond which the men could not be moved, and this was also termed the sacred line; wherefore when either of the parties was driven up to this fixed line or mark in the centre of the board, he then moved his piece from it, saying, 'I move my pebble from the sacred.'" The offensive moves seem to have had the following objects: 1, the temporary circumvention, where the pebble was checked between the *sacred* and another pebble; and was then, according to a law of the game, withdrawn with the expression just quoted; 2, the circumvention of any pebble took place between two hostile pebbles; retreat being cut off, such pebble was then taken; 3, each party endeavoured to get beyond the sacred, so as to occupy his adversary's half of the board, and so to crowd his game that no move should be left to him: the game was then finished.

Fig. 1.



There is a game which has been played all over the north of Europe from the remotest antiquity, which Christie supposes to be identical with the Greek game τριοδιον, and more ancient than the πεττεια, since *depositing* the pebbles seems to be more simple and primitive than moving them. The game is played on a board of the following form, and is known in England by various names, such as, "Ninepenny Marl," "the game of Morris" or "Nine Men's Morris" also Fivepenny Morris," and lastly "Merelles." Some writers state that the game was introduced into this country by the Norman conquerors, under the name of *merelles;* and that this word, which signifies *counters*, was afterwards corrupted into *morals* and *morris*. Others suppose the pastime to have derived the appellation of "Nine Men's Morris" from the different coloured men being moved backwards and forwards as though they were dancing a morris.

Fig. 2.



The scheme or board for the game is frequently chalked on the ground; on barn floors; on the crown of a hat; on the side of a pair of bellows; upon a table; or, (as we have often seen it on Salisbury Plain,) it is cut out in the green sward. Hence the remark of Titania in the *Midsummer Night's Dream:*

> The nine men's morris is filled up with mud,

alluding to the wet season, which had obliterated the rustic merelle board.

Strutt, the historian of the *Sports and Pastimes of the People of England*, gives a figure of the merelle-table as it appeared in the fourteenth century, the lines of which are similar to those in figure 2; the only difference is, that each of the angles is marked by a black spot.

The manner of playing the game is briefly thus:—two persons, each having nine men, different in colour or form, for distinction's sake, place them alternately, one by one, upon the angles or spots; and the object of either party is to prevent his antagonist from placing three of his pieces so as to form a row of three, without the intervention of an opponent piece. If he succeed in forming a row, he takes one of his antagonist's pieces from any part except from a row of three which must not be touched if he have another piece on the board. Every piece that is taken is put into the central square. When all the pieces are laid down, they are played backwards and forwards, in any direction that the lines run, but they can only move from one spot to another at one time. He that takes all his opponent's pieces is the conqueror. The game is subject to slight variations in different counties of England. In Wiltshire, if the losing party have his men reduced to three, they can hop and skip into any vacant place, in order to form a line. However simple this rustic game may appear, much skill is required, particularly in the choice of the first places, so as to enable the player to form the lines as perfectly and as quickly as possible.

The Oriental name for the central space (Fig. 2) is equivalent to the English *pound* or *fold*, and Christie thinks it very probable that it was originally intended to represent something of this kind; for, as the Eastern shepherds amused themselves by playing with the pebbles, whilst they watched their *folds*, they might afterwards have introduced the figure of the fold itself as an ornament to the board, and as a settled place for depositing the pebbles captured during the game.

From a critical examination of the Greek writers, our author concludes, that the game of the pebbles was derived from the original game of the Asiatic shepherds. The pastoral character of this game now became military—the central *fold* was converted into a *sacred*, which acted as a kind of mound or barrier against mutual incursions. In the course of time the game was modified by the use of dice as well as pebbles, and formed

the ancient *plindion:* the board was now called the *city*, the pebbles *dogs*, and the object of the game was said to be to capture the city: the pieces appear to have been of two colours, and one pebble being circumvented by two others of an opposite colour was captured. There appear to have been twelve points on each side of the board, and fifteen men of each colour; but here, as the conclusions of our author lead us rather to the game of backgammon than to chess, we omit much of his theory.

The steps by which our author supposes the advance to have been made from this primitive game to that of chess, (in which there is, *first*, not a sacred line, but a royal line behind each row of pebbles or pawns, *secondly*, a king whose person is sacred, and, *thirdly*, officers to attend him,) are so very ingenious that we quote the passage at full:

I have before explained, the meaning and office of the *sacred mark* in the πεττεια; and have shown that, as the object of the game was to effect a circumvention of any one pebble, between two of the adverse party, so, the same could be produced by forcing a pebble into an intermediate station between the *sacred* and a hostile piece. This was an advantage only to be found in the centre of the board. But the purpose of the sacred was not complete; for the assistance of the sacred would often have been desirable for effecting a circumvention in the distant parts of the board. *Hence arose the idea of making it moveable.* By its power of co-operating with a pebble in circumventing, it was already endowed with the properties of a piece; and it was therefore no great stretch of innovation to raise it to the dignity of one, thereby giving it in form what it already possessed virtually. As the advantages of it, in its first inactive state, had been common to both, so it was now but fair that *each party should have a pebble endowed as the* ιερα γραμμη *had been.* To distinguish it from the rest, it was perhaps called the "*inviolable pebble.*" As the *central mark* was *sacred*, so was this *inviolable;* and hence the custom of NEVER TAKING THE KING AT CHESS. As it would not have been prudent to expose the sacred person of this pebble in the front line, and the scanty dimensions of the board would not allow of the pebbles being obtruded further upon the middle of the board, *a place was assigned to it in the centre of an* ADDITIONAL *or* REAR *rank.* An imperfection yet remained. The properties of the sacred were twofold,—*inviolability*, and the power of making any pebble *recede* from it. We have only found a representative for its first property. The whole virtue of the sacred was to be called into action. The inviolable pebble was the solitary occupier of the rear rank:—it was thought proper that *attendants* should be given to the right and left of it, who should share amongst them the *offensive* powers of the sacred, which it might not have been so consistent with the character of the first dignified pebble to assume. The power of causing to *retire*, was therefore vested in the companion of the inviolable piece; and hence we have derived the custom of *checking.* And with all this, the original object of the πεττεια was still retained, namely, the BLOCKADE; to which the *checkmate* of the modern chess is certainly analogous; only that in the early game it was attempted indiscriminately upon the pebbles in general; and in the improved game, the effect of it is exclusively directed to the most conspicuous piece.

The most important feature in this ingenious argument is the metamorphosis of the sacred mound, barrier, or temple, into a "king," endowed with the inviolability of the sacred (that is, not subject to capture); but conferring the repelling power of the sacred on the persons of certain officers or superior pebbles provided for that purpose. In modern chess the king has little or no repellent power; for he cannot put himself into check, while all the other pieces may do so. The sacred being thus converted into an inviolable piece, and four officers being created in order to repel attack, and guard the person of the king, the central's sacred was removed, and an additional line or row of points was added behind the common pebbles or pawns. Doubling some of these officers, so as to increase the number to eight, and increasing the number of single pebbles, or pawns from five to eight, are regarded as subsequent innovations

The learned inquiries of our author tend to show that the Scythians, (the ancestors of the present Tartars,) occupying the desert tracts eastward of the Caspian, were the original inventors of the game from which chess has been produced by a regular series of improvements and modifications made during three thousand years: therefore that the game existed long before the siege of Troy; and that it thence spread westward to Greece, south-west to Persia, south-east to India, and east to China; and that in each country it received certain modifications and additions.

The game was gradually introduced into Rome, and probably formed the *Ludus Latrunculorum.* The object of this game, and the method of playing it, were similar to the πεττεια, except that there was no *sacred;* and that the power of *checking* was lost by the absence of the central space. Hyde is of opinion that the Ludus Latrunculorum greatly resembled the modern draughts, in that the pebbles moved diagonally, made captures by leaping over the pebbles of the antagonist, and that they were crowned. On these points Christie is at issue with Hyde, and he also objects to the interpretation of Ovid by Daines Barrington, that the pieces were shaken like dice instead of being moved like draught-men.

The Chinese chess is a contest between two small bands of soldiers on the banks of a river: to these a number of pieces is added, the chief office of which is to defend the general, and to capture straggling opponents. The pieces and men, as in the ancient πεττεια, have no distinction as to form: they are flat counters of ivory, an inch in breadth, and a quarter of an inch in thickness, and are distinguishable from each other only by means of certain lines marked upon them.

Christie is of opinion that the Hindoo who, thirteen centuries ago, is said to have invented chess, borrowed the ancient game from the Tartars, who were, and still are, the links of communication between all the nations of Asia, and gave to it some of the modifications already alluded to. The Chinese game in which the combatants, five on each side, fight on the opposite banks of a symbolical river, is supposed by our author to be a more primitive form than the Hindoo, derived from the Tartars, and subjected to less alteration. Mr. Davis, in his recent work on China, says,—"The Chinese chess differs in board, men, and moves, from that of India, and cannot in any way be identified with it, except as being a game of skill, and not of chance."

IT must be confessed, from melancholy experience, that a speculative acquaintance with the rules of duty, is too compatible with the violation of its dictates, and that it is possible for the convictions of conscience to be habitually overpowered by the corrupt suggestions of appetite. To see distinctly the right way, and to pursue it, are not precisely the same thing. Still nothing in the order of means promises so much success as the diligent inculcation of revealed truth. He who is acquainted with the *terrors of the Lord*, cannot live in the neglect of God and religion with present, any more than with future, impunity; the path of disobedience is obstructed, if not rendered impassable; and wherever he turns his eyes he beholds the sword of Divine justice stretched out to intercept his passage. Guilt will be appalled, conscience alarmed, and the fruits of unlawful gratification embittered to his taste.—ROBERT HALL.

OF the great number to whom it has been my painful professional duty to have administered in the last hours of their lives, I have sometimes felt surprised that so few have appeared reluctant to go to "the undiscovered country, from whose bourne no traveller returns." Many, we may easily suppose, have manifested this willingness to die from an impatience of suffering, or from that passive indifference, which is sometimes the result of debility and extreme bodily exhaustion. But I have seen those who have arrived at a fearless contemplation of the future, from faith in the doctrine which our religion teaches. Such men were not only calm and supported, but cheerful in the hour of death; and I never quitted such a sick chamber, without a wish that my last end might be like theirs.—SIR HENRY HALFORD.

RURAL SPORTS FOR THE MONTHS.

OCTOBER.

See! from the brake the whirring pheasant springs,
And mounts exulting on triumphant wings:
Short is his joy; he feels the fiery wound,
Flutters in blood, and panting beats the ground.
Ah! what avail his glossy, varying dyes,
His purple crest, and scarlet-circled eyes,
The vivid green his shining plumes unfold,
His painted wings, and breast that flames with gold!—Pope.

Our tables are supplied with a very delicate article of food by means of the sport for which this month is distinguished. Pheasant-shooting commences on the 1st of October, and these birds, which are no less remarkable for the elegance of their forms than for the beauty of their plumage, are also highly prized in an economical point of view in all the countries where they are found. As an ornament to parks and thickets they are unrivalled among British or naturalized species, and in the rich and glowing colours of their plumage they seem to belong to another and a more brilliant clime.

Pheasants are in general shy and solitary birds, frequenting the thickest coverts. Spaniels are therefore usually employed by the pheasant-shooter, and are required to be strong, short on the legs, and courageous; since the thickness of the coverts will oppose, and sometimes overpower any but the strongest and best-made dogs. Pointers, beagles, and even terriers, are also used in this sport, but the nature of the locality will best determine the sort of dogs to be employed. Pheasant-shooters, in general, assemble early, and after searching the stubbles of wheat, barley, and bean-fields, proceed to the neighbouring woods. A foggy day is not deemed unfavourable to the sport, for pheasants are apt to wander from their close retreats in such weather, while in bright sunshine they keep mostly to the depth of the woods. They are often spoken of as birds of easy conquest, on account of their size and the slowness of their flight, and they have even been called stupid, because when roused, one of them will often perch on a tree, and have its attention so riveted on the dogs as to allow the sportsman to approach very near. The old birds, however, have been observed to have recourse to various stratagems, before they have been compelled to take wing, and when they rise, the whirring noise they make with their wings, and the disturbance of the leaves, through which they are making their way, is so startling to the inexperienced hand, that many a young sportsman finds his first attempts at pheasant-shooting far less easy of accomplishment than he had been led to expect. In October the trees are so full of foliage, that it is a difficult and wearisome task to beat the woods for pheasants, in addition to which the birds often rise without being seen, and when seen and shot, they are frequently lost, or the search after them occupies a considerable time. Shooters therefore endeavour to meet with them in potatoe or turnip-fields, deep stubbles, and rushy fields, near covers, but especially under hedges, holly-trees, or in coppices, where they are generally pointed by the dogs, and the greater part of them being young birds, they are easily killed. November is considered by many sportsmen as the month in which pheasant-shooting is to be had in perfection. The leaves have then fallen from the trees, and no longer obstruct the view of the rising bird, the pathways in the woods are more easily traversed, and the birds themselves are full grown, and in better condition than during the preceding month. But these advantages may be looked on as in some measure counterbalanced by the increased wariness of the birds, and their comparative scarcity after the earlier shootings have thinned their numbers, and have taught those that remain to flee the report of the destructive gun.

It is only on particular occasions that sportsmen intentionally destroy the hen-pheasant. It seldom happens that the hens become too numerous, and as they are easily distinguished from the male birds, they are generally spared. A conventional understanding was formerly entered into, that a fine of half-a-guinea should be paid to the keeper of the manor whenever a hen-pheasant was killed. This is frequently evaded, but is nevertheless a wise regulation. It is thus noticed by the poet Pye:—

> But when the *hen* to thy discerning view,
> Her sable pinion spreads, of duskier hue,
> The attendant keeper's prudent warning hear,
> And spare the offspring of the future year;
> Else shall the *fine*, which custom laid of old,
> Avenge her slaughter by the forfeit gold.

The Common Pheasant (*Phasianus Colchicus*, Linn.,) is considered as the type of the genus *Phasianus;* and though not originally British is completely naturalized in our country, and adapts itself with facility to our climate, as it does to that of most other temperate regions of the earth where it has been introduced.

It seems generally admitted that the pheasant was originally brought from the banks of a celebrated river in Asia Minor. This river is in ancient Colchis, and was once of so much importance that many towns were erected on its banks, and one hundred and twenty bridges crossed its waters, in different parts of its course. Its ancient name was *Phasis*, but it is now called the *Faz*, and sometimes the *Rion:* the Russians are now entirely in possession of its navigation. The ancient Greeks, we are told, in ascending this stream were attracted by the beauty of the birds which they saw in great numbers on its banks, and soon secured to themselves this valuable addition to their luxuries. Thus pheasants were rapidly introduced to the southern countries of Europe, and generally made part of the expensive and superabundant repasts of the ancients. Heliogabalus, in his ostentatious folly, is said to have fed the lions in his menagerie with these birds. The banks of the Phasis are still, as in ancient times, remarkable for the number of fine pheasants to be seen there. The name of these birds, as it is evident, is derived from that of the river: in Italy they are called *Fasiano*, in France, *Faisan*. The time of their introduction into Great Britain is uncertain. In the time of our first Edward the price of a pheasant was four-pence, but we must remember the superior value of money in those days, and also the rate at which other provisions were sold. For instance,—during the same reign we find that wheat was sold at one shilling and eight-pence the quarter. A receipt "for to boile Fesant" is also found in a book stated to have been compiled by the master-cook of Richard the Second, and this proves the bird to have been known as early as 1381.

The accurate description of the common pheasant by Bewick need only be compared with the reality, to prove its faithfulness. According to this Naturalist the bird is two feet eleven inches in length. The bill is of a pale horn colour; the nostrils are hid under an arched covering; eyes yellow, and surrounded by a space, in appearance like scarlet cloth, finely spotted with black; immediately under each eye is a patch of short feathers of a dark glossy purple; the upper parts of the head and neck are deep purple, varying to glossy green or blue; lower parts of the neck and the breast reddish chestnut, with black indented edges; the sides and lower part of the breast the same, with pretty large tips of black to each feather, which in different lights vary to a glossy purple; the under parts of the body are dusky; the back and scapulars beautifully variegated with black and white, or cream-colour speckled with black, and mixed with deep orange, all the feathers edged with black; on the lower part of the back is a mixture of green; the quills are dusky, freckled with white; the two middle feathers of the tail are about twenty inches long, the shortest on each side less than five, of a reddish brown marked with transverse bars of black· legs dusky, with a short blunt

spur on each, but in some old birds the spurs are as sharp as needles; between the toes there is a strong membrane. The female is less, and does not exhibit that variety and brilliancy of plumage which mark the male; the general colours are light and dark brown, mixed with black, the breast and belly finely freckled with small black spots on a light ground; the tail is short, and barred with black somewhat like that of the male; the space round the eye is covered with feathers.

The common pheasant is the only one of its kind which has multiplied freely in our island. The beautiful natives of China, the golden and silver pheasant, are confined to parks and aviaries. The hen pheasant makes her nest on the ground, and lays from twelve to fifteen olive-coloured eggs, which are smaller than those of the domestic hen. The incubation lasts about three weeks; at the expiration of which time the young break the shell, and follow their mother like chickens.

The eggs are sometimes destroyed in mowing the clover near the woods which pheasants frequent, and of those which are hatched it is reckoned that one-third never attain their full growth, for many die in their first moulting, and numbers more in a disorder of the trachea, commonly called "gapes." This disease is occasioned by an intestinal worm, which adheres to the inner surface of the wind-pipe, and causes death by suffocation, sometimes arising from inflammation of the part, sometimes by actual obstruction. Fumigation by tobacco, when carefully employed, has been found to cure this disorder, but a simpler means of cure in the case of domestic poultry, amongst whom the disease is common, is to put a pinch of common salt far back in the mouth of the bird so as to reach the upper part of the trachea.

These birds have always shown a remarkable timidity and indisposition to become domesticated like other gallinaceous poultry. Mr. Waterlow has the following remarks on this subject:

Notwithstanding the proximity of the pheasant to the nature of the barn-door fowl, still it has that within it, which baffles every attempt on our part to render its domestication complete. What I allude to is a most singular innate timidity, which never fails to show itself on the sudden abrupt appearance of an object. I spent some months in trying to overcome this timorous propensity in the pheasant, but I failed completely in the attempt. The young birds which had been hatched under a domestic hen soon became very tame, and would even receive food from the hand, when it was offered cautiously to them. They would fly up to the window and feed in company with the common poultry. But if any body approached them unawares, off they went to the nearest cover with surprising velocity. They remained in it till all was quiet, and then returned with their usual confidence. Two of them lost their lives in the water by the unexpected appearance of a pointer, while the barn-door fowls seemed scarcely to notice the appearance. The rest took finally to the woods at the commencement of the breeding season.

Yet when pheasants are in the constant habit of being attended in the covers by a keeper, they attend to his whistle and come in flocks to be fed; but this is during severe weather and when they are pressed by a scarcity of food.

Pheasants are very general feeders: blackberries, sloes, haws, grain, seeds, and tender leaves are eaten by them, together with a great number of insects. The hen bird when kept in confinement will lay many eggs, but does not dispose them properly in a nest or sit upon them. The eggs are therefore generally placed under a common hen, and when they are hatched the young are reared in the following manner. During the first month their food consists of hard boiled eggs, crumbs of bread, and lettuce leaves, well mixed, with an addition of the eggs of meadow-ants. This food must be given frequently and in small quantities. Every kind of moisture is hurtful to them at this early age, and it is therefore necessary to keep them without water, and never to let them go abroad until the dew is dried up. The place in which they are kept, must be very clean, and they should be taken in before sunset. In the second month they may receive more substantial food, such as wheat, barley, ground beans, and a variety of small insects, with the eggs of wood-ants They must now have access to small heaps of fine sand, or of dry earth, that they may rid themselves of the vermin with which they begin to be infected. Clean water must also be given to them frequently. In the third month the young birds may be carried, with the crib, into the fields, if possible where there is white clover, the seeds of which are found to strengthen them and forward their growth. They must at first be fed in the field with their usual food, but the quantity may be daily diminished, so that they may learn to depend more and more upon their own resources, and become better acquainted with the country. After a time they will grow as wild as those bred in the woods, and will no longer require to be provided for by those who took the trouble to rear them.

It has been found easier to collect pheasants together on an estate, than to keep them there, when collected. They often leave the place where they have been bred in search of food that is congenial to them: on this account it is found necessary to supply the covers with a variety of food, and to take care that water is also at hand. Mr. Yarrell mentions a mode of inducing them to stay at home which is occasionally adopted, *i. e* sowing in summer, beans, peas, and buckwheat mixed together, and allowing the whole crop to remain standing on the ground. For winter feeding, cart-loads of raw potatoes are occasionally driven into the covers and scattered about by hand.

We cannot close our notices of the pheasant without mentioning the rare species of this genus of which a specimen was exhibited some few years ago in the Zoological Gardens, Regent's Park. It is a native of some parts of the Chinese Empire, but is very rare in Pekin. The specimen alluded to was found on the snowy mountains of Surinagur, and was called *Doomdurour* or Long Tail. It was a most beautiful bird, and the tail-feathers were of the extraordinary length of five feet six inches. This species is called, from the name of the gentleman who first introduced it into Europe, "*Reeves's Pheasant.*"

PHEASANTS.

Perhaps in no trade has the division of labour been successfully carried to so great an extent as in that of watch-making. In an examination before a committee of the House of Commons, it was stated that there are a hundred and two distinct branches of this art, to each of which a boy may be apprenticed.—G. Poulett Scrope.

LONDON:
JOHN WILLIAM PARKER, WEST STRAND.
Published in Weekly Numbers, price One Penny, and in Monthly Parts, price Sixpence.
Sold by all Booksellers and Newsvenders in the Kingdom.

THE

Saturday Magazine.

No. 599. SUPPLEMENT, OCTOBER, 1841. { PRICE ONE PENNY.

THE HOUSES OF ALL NATIONS. II.

OLD ENGLISH MANOR HOUSE.

On a former occasion, (Vol. XV., p. 33,) we presented a brief view of the rude habitations of mankind, and stated that the transition from these to the comforts of a modern house was by no means abrupt; that a wide interval existed between them, which could only be filled up by tracing the progress of civilization in various countries through successive ages. A portion of this great and important subject, including ARCHITECTURE, has already occupied three Supplements, (Vol. XVI., pp. 121, 209, and 249,) and we now propose to conclude with a few rough sketches of the houses of those nations which have made considerable advances in the arts of life.

It will be necessary to remark, that our object does not include a description of temples, churches, prisons, public offices, hospitals, &c.; but the homes, the domestic arrangements, of the middle classes of society. As the exhibition of architectural taste is more displayed in what are called public buildings than in private houses, we shall not find it necessary to dwell at much length on architectural details; but shall chiefly direct our attention to those arrangements by which the domestic comfort of the interior, rather than the beauty of the exterior, is secured. Royal palaces will not occupy much of our attention, for it is well known that such edifices partake less of the peculiar character of the people, than do dwellings of more humble pretensions. The palaces of the sovereigns of Europe, whatever differences they may present in external architecture or in dimensions, very much resemble each other in the costly decorations of the interior.

1. HOUSES OF THE ANCIENTS.

The nature of the details which the ancient classical writers have handed down to us, is not such as to give us much insight into their dwellings and domestic arrangements. Wars and tumults, ambitious projects, and contests for civil power, were unhappily so prevalent, that the "homes" of the ancients are but sparingly alluded to, and that in such form as little enables us to form a clear conception of them. There were, however, some distinguished men who did not disdain to leave on record something which would shew us what their dwellings were. Among this number was Pliny the younger, whose letters on various subjects, and to various persons, have been handed down. Pliny has left a singularly minute description of his summer villa in Tuscany. It is too long to present verbatim, but as it is of importance, in illustrating the arrangement of the house of a Roman gentleman, we will give a portion of it.

"My villa is so advantageously situated, that it commands a full view of all the country round; yet you approach it by so insensible a rise, that you find yourself upon an eminence, without perceiving you ascended. The exposition of the principal front of the house is full south, and seems to invite the afternoon's sun in summer (but somewhat earlier in winter) into a spacious and well proportioned portico, consisting of several members, particularly a porch built in the ancient manner. In the front of the portico is a sort of terrace, embellished with various figures,

and bounded with a box hedge. At the extremity of this portico stands a grand dining-room, which opens upon one end of the terrace, and such parts of the house which project forward, together with the woods inclosing the adjacent hippodrome. Almost opposite to the centre of the portico, stands a square edifice, which encompasses a small area, shaded by four plane trees, in the midst of which a fountain rises, from whence the water, running over the edges of a marble basin, gently refreshes the surrounding plane trees, and the verdure underneath them. This apartment consists of a bed-chamber, secured from every kind of noise, and which the light itself cannot penetrate; together with a common dining-room, which I use when I have none but intimate friends with me. A second portico looks upon this little area, and has the same prospect with the former I just now described. There is, besides, another room, which, being situated close to the nearest plane tree, enjoys a constant shade and verdure: its sides are incrusted half way with carved marble; and from thence to the ceiling a foliage is painted with birds intermixed among the branches, which has an effect altogether as agreeable as that of the carving; at the basis, a little fountain, playing through several small pipes into a vase, produces a most pleasing murmur.

"From a corner of this portico you enter into a very spacious chamber, opposite to the grand dining-room, which, from some of its windows, has a view of the terrace, and from others, of the meadow; as those in the front look upon a cascade, which entertains at once both the eye and the ear; for the water, dashing from a great height, foams over the marble basin that receives it below. This room is extremely warm in winter, being much exposed to the sun; and in a cloudy day the heat of an adjoining stove very well supplies his absence. From hence you pass through a spacious and pleasant undressing room, into the cold bath-room, in which is a large gloomy bath: but if you are disposed to swim more at large, or in warmer water, in the middle of the area is a wide basin for that purpose, and near it a reservoir from whence you may be supplied with cold water to brace yourself again, if you should perceive you are too much relaxed by the warm. Contiguous to the cold bath is another of a moderate degree of heat, which enjoys the kindly warmth of the sun, but not so intensely as that of the hot bath, which projects farther. This last consists of three divisions each of different degrees of heat: the two former lie entirely open to the sun; the latter, though not so much exposed to its rays, receives an equal share of its light. Over the undressing room is built the tennis court, which, by means of particular circles, admits of different kind of games. Not far from the baths is the staircase leading to the inclosed portico, after you have first passed through three apartments. . . . . At one end of the inclosed portico, and, indeed, taken off from it, is a chamber that looks upon the hippodrome, the vineyard, and the mountains. Adjoining is a room which has a full exposure to the sun, especially in winter; and from whence runs an apartment that connects the hippodrome with the house. On the side of the house rises an inclosed summer portico, which has not only a prospect of the vineyards, but seems almost contiguous to them. From the middle of this portico you enter a dining-room, cooled by the salutary breezes from the Apennine valleys; from the windows in the back front, which are extremely large, there is a prospect of the vineyards; you have also another view of them from the folding doors, through the summer portico. Along that side of this dining-room, where there are no windows, runs a private staircase for the greater convenience of serving at entertainments. At the further end is a chamber, from whence the eye is pleased with a view of the vineyard and of the portico. Underneath this room is an inclosed portico, somewhat resembling a grotto, which, enjoying in the midst of the summer heats its own natural coolness, neither admits nor wants the refreshment of external breezes. After you have passed both these porticoes, at the end of the dining-room stands a third, which, as the day is more or less advanced, serves either for winter or summer use. It leads to two different apartments, one containing four chambers, the other three; each enjoying, by turns, both sun and shade."

In another villa which Pliny had a few miles from Rome, the entrance was through a portico into a central court, and from thence another passage led into a large hall: on every side of this wall were either windows or doors leading to various apartments. On one side of the hall was a large family room and another which Pliny used as his library and study, together with a bed-room, and entrances to rooms belonging to the slaves or servants. On the other side of the hall were doors leading to the baths and many other apartments.

The excavations which have been made at Pompeii shew that the Roman dwellings were often very considerable in extent, and provided with numerous offices and outhouses. Baths were by no means an unusual adjunct to a house, and some of them were constructed with great ingenuity, so as to afford a supply of hot, warm, and cold water, to the different rooms appropriated as bath-rooms. This custom, of providing baths for frequent use, was carried to an extent that we cannot properly appreciate in England. Our humid climate affords us but little means of estimating the exquisite luxury which a bath affords to dwellers in warm countries, where the powerful heat of the sun during the day would enervate the body, if not refreshed by a bath. As there was a great similarity among the dwellings of the ancients, a short description will suffice. Amongst the Jews, Greeks, and Romans, houses were flat at the top, so that persons might walk upon them; and usually had stairs on the outside, by which they might ascend and descend without coming into the house. Each house, in fact, was so laid out that it inclosed a quadrangular area or court; this court was exposed to the weather, and being open to the sky, gave light to the house. This was the place where company was received, and for that purpose it was covered with mats or carpets for their better accommodation. It was paved with marble or other materials, according to the owner's ability, and provided with an awning of cloth or vellum to shelter them from the heat and vicissitudes of the weather. This part of their houses, called by the Romans *impluvium* or *cava ædium*, was provided with channels to carry off the water into the common sewers. The top of the house was level, and covered with a strong plaster by way of terrace.

2. Houses of England.

We shall now direct our attention to modern times, and take a rapid glance at the most striking differences that exist between the dwellings of different countries. We shall begin with our own country, as it will enable us better to understand the construction of others.

By dwelling in a house surrounded by other similar houses, we are not unlikely to forget altogether what are its principal features as compared with those of other countries:—there is no lack of instances in which extreme familiarity with a subject induces a sort of ignorance of it. Let us then examine the dwelling of an Englishmen in moderate circumstances. In the first place we find that,—unlike the houses of old,—there is no central court surrounded by buildings: ground is too valuable to allow space for such a form of houses. The roof is not flat: our rainy climate presents us with but few inducements to visit the house-top. The windows are not concealed from without, and made to open into the central court: jealousy and suspicion are not English characteristics in these matters. If we were to go on, step by step, making comparisons thus between an English house and an Oriental one, (for the latter at the present day very much resemble what the houses of the ancients used to be,) we should find that those differences are not the result of mere caprice, but have a foundation in the habits of the people, the extent of room compared with the number of inhabitants, or the climate of the country.

A modern London private house is generally built of brick, and has four or five distinct stories, with one staircase common to them all. These houses are not detached, but, from the value of land, are built adjoining one another; sometimes thirty or forty without any interruption. In the outskirts of London, where land is not quite so valuable, the wealthy citizen builds his villa, detached from others of a similar kind, and surrounded by a little garden. These are often made to assume something like the appearance of cottages,—and "Rose Cottage,"—"Lavender Cottage,"—"Pleasant Retreat," &c., written up at the gate, indicates that the owner *wishes* to consider himself in the country. It must be owned that in many instances there is a good deal of the "pride of humility" in these mock cottages; although in others, much taste and good arrangements are displayed.

The superior classes of shops in our large towns do not greatly differ from private houses, for all except the ground floor is arranged as in a private house. The commercial

establishments connected with wholesale trade are altogether different buildings. The domestic rooms are few in number, and principally devoted to the junior partners of a firm; for it is one of the points of ambition in a wholesale trader to have a country house (or cottage) to retire to when the business of the day is concluded. Such is the case to a remarkable extent in the city of London: foreigners would be surprised, did they know how few wealthy families have their home,—their living and sleeping rooms,—within the boundaries of the city.

When we leave the busy scenes of our great towns and extend our view to the country, we find every kind of dwelling, from the palace-like Chatsworth downward, including the manor house of the "country squire,"—the newly sprung-up country house of the merchant,—and the substantial and old English dwelling of the farmer. In Loudon's *Encyclopædia of Cottage Architecture* is given a *beau ideal* of an English country house,—that is, a detailed description of a country residence for an English gentleman, comprising the principal features which distinguish the best kind of country villas in this country. We cannot do better, perhaps, than give an outline of this description,—premising, that the house is not so much the palatial mansion of a peer, as the villa or mansion house of a "country gentleman."

The style of such a villa is the "old English," as being more picturesque and ornamental,—as according best with rural scenery,—and as admitting of any form most suitable for the various offices and servants' apartments:—the Grecian style, adopted under such circumstances, would be an application of architectural rules to purposes for which they were not intended. The villa is therefore in the Elizabeth style, and the ground-plan somewhat in the form of the letter H. The front presents a centre and two projecting wings: the centre containing the hall and dining-room, with a gallery and staircase behind them. One wing is occupied by the drawing-room and library, with a saloon between them. The other wing contains a sitting room, and offices for the upper servants: the inferior offices being in the basement, or in a distinct part of the building. The principal front is ornamented: in the centre is a porch of two stories; and the wall on each side (broken into compartments by pilasters, &c.) contains large mullioned windows; with a battlement or parapet at the top, decorated with busts, urns, heraldic ornaments, &c. Each end of the projecting wings presents a bay window, square or semicircular in form, with balustrade or stone covering above. The high and steep roof is decked with chimneys of various forms and heights; and in the centre is the tower over the grand staircase; its cupola roof terminating in a rich lantern, and supporting a weathercock or dwarf spire.—The four distinguishing features of this exterior are, the projecting wings, the high roof, the numerous chimneys, and the lofty staircase tower.—Outside one of the wings of the house is a terrace, with a handsome balustrade, and an entrance is gained to this terrace by a door from the saloon.

The porch of the house is raised a step or two, and is ornamented in its principal parts, and contains seats for servants, &c. From the porch we proceed to the entrance hall, which corresponds in style with the size of the building, and is more lofty in English than in Grecian forms of villa. The hall looks as if meant for something more than the mere entrance to the house; for in the old English times, when the Baron was surrounded by his retainers, the hall was the apartment in which all dined,—high and low. The hall is furnished with old oak chairs and benches, a high table across the upper end, and other tables in other positions round the sides of the hall. This is the place, too, for the armour, the defensive arms, the hunting implements, the bows and arrows, the fishing tackle, the stags' horns and other trophies of the chase. The floor is of stone, not covered by any carpet: and the room is warmed either by hot air (a modern invention), or by heaping logs of wood on the large open fire-place at one side of the hall. From this hall there is a grand entrance to the principal apartments, and a humbler one to the servants' offices.

From the hall we proceed to the gallery beyond it. This gallery is a kind of passage leading to the principal apartments. On one side it leads to the saloon, dining-room, &c.: on another to the servants' offices: and in another to the grand staircase. The saloon is a sort of vestibule to the living rooms, having on one side a door leading to the dining-room, on another a door leading to the drawing-room, on another windows which open on to the terrace and garden. The saloon is often used as a music room, and is therefore arranged appropriately, in being nearly divested of furniture: indeed if it were not so employed, its general use is not of a kind to render much furniture necessary.

The drawing-room is the most elegant apartment in the house, as may be expected from the mode in which it is employed. This room is of noble proportions, and has a bay or projecting window at one end: there are also windows on one of the other sides, looking out into the terrace and garden, and opposite these windows is the fire-place. The ceiling is of lace-work stucco, interspersed with shields of the family arms. This room contains such of the best pictures belonging to the family as may be of small size. In the pier between the windows is a large looking-glass, reaching nearly to the ceiling.

From the drawing-room we proceed across the saloon to the library, the general arrangement of which is more sombre and sedate than that of the drawing-room, but the size of the rooms is nearly equal. The walls are of course chiefly occupied by cases for books, maps, &c., and those parts which are not so occupied are painted or papered of some subdued colour, so as not to give a gaudy effect to a room devoted to study. A pair of globes, reading-desks, library table, &c., are arranged in this room. Such a room is a general place of reception for gentlemen during the earlier hours of the day.

The dining-room is situated near the hall. The walls are of old oak wainscot, and are nearly covered with pictures, this being the chief depository of the family pictures, unless a gallery be kept for their reception. The large fire-place is provided with "dogs" for the reception of the logs used as fuel. The tables, sideboards, cellarets, "dumb-waiters," &c., necessary to such an apartment, we need not descant upon. Except in very large houses, the dining-room is generally the breakfast room for the family.

The private study is a room differing from the library in this, that although both are intended for study or business, the library is open to the ladies as well as the gentlemen, whereas the study is the room in which the "squire" transacts his various affairs with steward, bailiff, &c., &c.

These are the principal apartments on the ground-floor: we will therefore proceed up stairs. The staircase is an important part of an old English house. The steps are either of stone or of polished oak, and the balustrades and rails are of carved oak. The staircase is lighted by a large mullioned window, filled with stained glass. This staircase leads up to the bed-rooms of the principal members of the family. A house of some pretension will often have a "state" bed-chamber, devoted especially to the use of such visitors as may be of consequence. This "state" room is furnished in a somewhat costly style, and is accompanied by two dressing-rooms. The other bed-rooms have one dressing room each attached to them.

The servants' bed-rooms are on the highest floor, and are approached by a separate staircase from another part of the house. The stairs are in connexion below with the housekeeper's room, the kitchen, and all the various offices appropriated to the duties and employments of the servants. These we need not describe in detail, but as an example of a kitchen fit for a large house, we may quote the following from the work last alluded to:—"I remember to have seen a kitchen, at a house in Warwickshire, which struck me particularly. The kitchen, scullery, larder, &c., formed a range of building on one side of the kitchen court, separate from the house, but there was a covered way between them The building was of two stories, the kitchen occupying the centre. It was a large lofty room, of good proportions, as high as two stories of the building. You entered it at one end, by large folding doors, from a passage through the building: at the opposite end was the fire-place, with a screen before it, on one side of which was the door to the scullery and bakehouse, on the other side a range of set coppers of different sizes. On one side of the room were two rows of windows, and under the lower row a range of charcoal stoves and hot plates, the latter to keep things warm. The other side had only the upper row of windows, and against the wall was a dresser, above which the copper cooking utensils, &c., were ranged in a very ornamental way. A long table was in the centre of the room, and over the door a dial clock. The ceiling had a very handsome cornice, and a boss in the centre, from which hung a brass lamp. Opposite the entrance-door another door admitted you to a passage, on one side of which were the larders, on the other, salting-rooms, &c., and at the end a staircase led to the cook's apartments over." Such a kitchen is, however, of

rather a higher standard than would be required for an English country house.

The reader will understand that the above is not so much a description of a house actually existing as a means of conveying a general idea of most of our country villas.

If we visit our northern neighbours we shall not find a very striking distinction between their houses and those of the English. Indeed, so much are the habits and tastes of the wealthy classes in England, Scotland, and Ireland becoming assimilated by constant intercourse that their dwellings bear a very close resemblance to one another. We may, however, observe that one characteristic feature of the houses at Edinburgh is the enormous height to which they are built. No private houses are to be seen in London equal in height to many at Edinburgh, which extend sometimes to seven or eight stories, or "flats." These very lofty houses are, however, more prevalent in the trading parts of the city than in that part occupied by the genteel inhabitants. It is worthy of a passing remark that Scotland does not contain so many middle-class houses as England,—not so many manor-houses of moderately wealthy landowners, nor houses of retired tradesmen, nor substantial farm-buildings. This arises, not from any inferiority in the wealth or character of the people, but from the events of her history. It is not yet one hundred years since Scotland was a scene of rebellion and anarchy,—highlander despising lowlander, because the former had not yet learned to appreciate the advantages of social comfort, as enjoyed in the lowlands, and in England. But since that period an unprecedentedly rapid progress has been made in every part of Scotland, and her houses, as well as the spirit of her institutions, are becoming more and more like those of England. In Ireland, too, many circumstances have retarded the increase of a class of inhabitants between the very rich and the very poor.

3. Houses of France, Switzerland, and Germany.

We must cross the Channel, to visit the houses of our neighbours, the French. These are generally speaking larger than the houses of English persons of equal rank. But this is partly accounted for by the different way in which the house is parcelled out. In England a respectable family will occupy a house of moderate size to themselves. In France they would occupy a portion of a very large house. Each floor contains a suite of rooms, and a house often contains as many respectable families as there are floors. We are here speaking not so much of large mansions as of respectable private houses.

In Paris, the large mansions generally obtain the name of *hotels*, a term which we apply to the highest class of houses for public accommodation. Mr. Cooper, in his *Residence in France*, has given some details respecting these Parisian mansions. He says,—"The private hotels are even more numerous than the private gardens, land not always having been attainable. Of course these buildings vary in size and magnificence, according to the rank and fortune of those who caused them to be constructed; but the very smallest are usually of greater dimensions than our (American) largest town-houses; though we have a finish in many of the minor articles, such as the hinges, locks, and the wood-work in general, and, latterly, in marbles, that is somewhat uncommon, even in the best houses of France; when the question, however, is of magnificence, we can lay no claim to it, for want of arrangement, magnitude, and space." The hotels bear the names of their owners. The higher classes of the nobility were accustomed to build a smaller hotel near the principal structure, which was inhabited by the inferior branches of the family, and sometimes by favoured dependents,—this is called the *petit hôtel*. Our first apartments were in one of these petits hotels, which had once belonged to the family of Montmorenci. The great hotel, which joined it, was inhabited, and I believe owned, by an American, who had reversed the usual order of things by coming to Europe to seek his fortune. Our next abode was the Hôtel Journiliac, in a small garden of a remote part of the Faubourg St. Germain. This was a hotel of the smaller size, and our apartments were chiefly on the second floor, or in what is called the third story in America, where we had six rooms besides the offices. Our saloon, dining-room, &c., had formerly been the bed-chamber, dressing-rooom, and ante-chamber of Madame la Marquise, and gave one a very respectful opinion of the state of a woman of quality, of a secondary class, though I believe that this family, too, was highly allied. We are now in a small hotel in the Rue St. Dominique, where in some respects we are better lodged than ever, though compelled to occupy three floors. Here the saloon is nearly thirty feet in length, and seventeen high. It is panelled in wood, and above all the doors, of which, real and false, there are six, are allegories painted on canvas, and inclosed in wrought gilded frames. Four large mirrors are fixtures, and the windows are vast, and descend to the floor. The dining-room, which opens on a garden, is of the same size, but even loftier."

On passing from France into Switzerland, we find that a marked change occurs in this respect:—that in the latter country each family, generally speaking, has a house to itself, whereas, as has been stated, in France each family frequently content themselves with a single floor. There are other differences, too. The French houses are mostly built of rough stone, and stuccoed; while those of Switzerland,—particularly if near the great pine forests,—are often log-houses, built almost wholly of wood, but finished very carefully, and constructed with great accuracy. The walls are formed of whole trees neatly squared and notched into each other at the ends where the walls cross. The roof is of wood; short pieces of pine split into thin layers are used as tiles, and held together by small spars laid across them, which are, in their turn, kept down by stones. Many of the cottages have wooden chimneys, the whole of the flue being formed of and lined with wood: the smoke and turpentine together produce a varnish, which preserves it from taking fire. The beams supporting the roof are ornamented at the ends; and the principal front is also carved, sometimes with elaborate ornaments, and inscriptions in German text are painted in several colours. These houses have altogether a picturesque appearance, and are much warmer than houses of stone or brick.

The houses of Germany may vary considerably according to the locality,—some bordering on the cold climate of the north of Europe, while others adjoin Switzerland and Italy. In some parts, such as North Prussia, the houses are framed of wood with bricks between; and the upper stories project over the lower, and are supported on columns generally of wood. In other parts the houses are of frame-work of wood, the interstices filled with unbaked bricks, and then plastered with clay. While in other parts, again, the arrangement of the houses nearly resembles that of the English. We may here briefly notice the character of the buildings in two or three of the principal cities of Germany.

The general nature of the better class of houses in Vienna is massive and imposing, rather than ornamental. The streets are generally narrow; and the houses lofty,—rising to four or five floors, which are all entered by a common stair. Some individual masses of building, in the heart of the city, are as populous as large villages. One dwelling-house containing ten large courts,—is peopled by more than twelve hundred inhabitants, and yields a yearly rental of 6500*l*. Another building contains no less than one hundred and fifty separate dwelling-houses. Even the ordinary buildings are generally in the form of a square, surrounding a small court; but the houses are so high, and the court is of such small dimensions, that it frequently has more the appearance of a well; and the staircase, which receives its light from it, is almost in darkness. Every house, whatever number of families it may contain in its several floors, is under the superintendence of a *hans-meister*, or house-master, who is a personage of much importance to the convenience of all who inhabit it. He is generally some humble person employed by the proprietor to take care of the house, and to lock up the outer door at a certain hour in the evening, after which neither ingress nor egress can be obtained without giving him a fee.

The arrangement of the large houses in Berlin is very different from those of Vienna. There is an imposing palace-like effect produced, on account of the general employment of an Ionic portico in front of most of the principal buildings. Sometimes three out of the four sides of a building are decorated with porticoes.

Dresden, the capital of Saxony, differs from both the forenamed cities. The general style of building is simple, austere, and imposing. The wealthy inhabitants, in building their residences, thought chiefly of convenience and duration, not of pillared portals and airy verandahs. The houses are lofty and the streets narrow; but some of the principal streets are of ample breadth, and lined with stately, though unadorned buildings. Within the last few years, however, a tendency has shown itself to introduce more architectural regularity than was formerly displayed in the houses of Dresden.

GRENADA.

Mr. Cooper visited one of the baronial residences on the banks of the Rhine, at present occupied by a brother of the King of Prussia. A few words may be said respecting it here. The entrance is by a drawbridge. The court is narrow and inconvenient; but there are several little terraces which command views of the scenery of the Rhine. The Ritter Saal, or Knight's Hall, though not large, is a curious room. The fire-place is of an enormous size; and round the walls hang numerous pieces by ancient armour. The chandelier is a circle formed of uniting bucks' horns, from which lamps are suspended. In one corner of the hall is an ancient vessel to hold water, and beneath it a porcelain trough. The chairs, tables, settees, &c., are all of oak, and covered with armorial bearings. The stairs have a quaint and remarkable appearance, and in one instance they encircle the exterior of a tower, at a giddy elevation of nearly three hundred feet above the river, the tower itself being placed on the outermost verge of the precipice.

In Holland and Belgium, the houses do not possess a distinctive character. They are partly French, partly German, and partly English. But we may state generally, that they are very deficient in anything like architectural beauty.

4. Houses of Northern Europe.

In the colder climates, such as Denmark, Russia, Sweden, and Norway, we find precautions taken against the chilling blasts of winter, which are not called for in the southern countries of Europe. Denmark, Sweden, and Norway, particularly the latter two countries, are not so well provided with middle-class houses as most of the other European states. The peasants' houses are generally log-houses, but with a more highly pitched roof than those of Switzerland; and they are often covered with boards projecting six feet beyond the walls. A general custom in the middle-class houses in Russia is to cover the roof with sheet-iron, and paint them with vivid colours, mostly green and red. Another feature, (to which we shall presently further allude,) is that of having double windows to the principal rooms. In the villages, each house presents a bold projecting gable towards the street: the houses are of two or three stories with a balcony on the gable front.

Dr. Granville, during a residence of several months at St. Petersburgh, had an opportunity of seeing the habitations of the wealthy classes in that capital, removed on the one hand, from the costly splendour of the Emperor's palaces, and, on the other, from the more humble dwellings of the trading community.

The entrance to the St. Petersburgh mansions is generally by a private door adjoining the carriage gate. Within is a spacious yard or court, in which enormous heaps of fire-wood are piled on one side, and around which are the four sides of the mansion. Under the great carriage gateway is generally a double glazed folding door, for receiving visitors on grand occasions, leading to the foot of the grand staircase; but the general daily entrance is by the private door: this door is glazed as well as the other, so that a liveried porter withinside sees visitors approaching and opens the door to them without any application to a bell or a knocker. The owner of the mansion generally occupies the ground floor, near the street door, with his study, receiving room, waiting room, private cabinet, &c. The stairs of the staircase leading to the upper stories are generally of coarsely-grained, unpolished granite: they are only occasionally scoured, and have seldom a strip of carpet laid on them. The staircase is square, with high walls, lighted by three or four windows, and decorated with statues, busts, and pictures; but they have seldom the light iron balustrade which gives such an elegance to the staircase of an English mansion.

At the top of the staircase we meet with an ante-room, generally occupied by lacqueys; from whence we enter a long suite of drawing rooms, which are fitted up with great magnificence, having costly furniture round the walls, but, like the Parisian mansions, having none in the centre of the room. The floor is inlaid with two or three differently coloured woods, which are kept highly polished. After the drawing rooms come the ladies' apartments, as they are termed, often twelve or fifteen in number, and including three or four state rooms. The fancy woods for the furniture are of a great variety of kinds, and are highly polished. There are rich silk draperies, and the walls are either painted in fresco or hung with silk. The ceiling is generally painted in distemper with an allegorical or other design. Chandeliers pendant from the ceiling are not much used; but almost every room has a magnificent looking-glass, the manufacture of which is conducted with much skill in Russia.

One of the most remarkable characteristics of these Russian mansions, is the swarm (for it is nothing less) of servants. The master and mistress, as well as the guests, go to the ante-room at the top of the staircase, to throw off their outer garments, such as cloaks, furs, flannel boots, &c., and numerous servants are there ready to receive them. At dinner, one servant stands behind the chair of every guest. But these instances are comparatively commendable: it is

stated by all travellers, that a large number of the servants have absolutely nothing to do. It is only partially that the use of *bells* has been adopted in the Russian mansions, and where they are not used, a servant stands in each room to receive orders, and one or two boys stand at every door of the suite of rooms, and thus convey orders from one to another. But the possession of more servants than are wanted, is only a part of the evil; for it is customary for each servant to have his wife and family in the house, and not unfrequently his relations and friends. A Russian officer told Dr. Granville, that when he married, he had determined to reduce the number of his household, to something like a moderate limit, and he retained forty: in three or four years afterwards, he found that he was supporting double that number, the wives and children included. It was stated that the Countess Orloff had at Moscow so many servants that she established a hospital for them when ill: their number was eight hundred. Yet it seems, that there is not one female servant whose duties are equivalent to those of an English housemaid;—bed-making, dusting, sweeping, &c., are all performed by men. The existence of this peculiarity in the domestic arrangements of the Russians depends on the state of society in general in that country, and is influenced by causes too intricate to be explained here.

We may here consistently allude to the precautions which the Russians take to adapt their dwellings to the nature of the climate. The winters are very severe, and the difference of the arrangements for summer and winter is greater than that which exists in England. When the winter season is approaching, the better sort of houses are provided with double windows, an extra entrance door, and a peculiar kind of close stove. The mode of doubling the windows is this:—A dry day is selected, when every part of the window is as free from damp as possible, an additional window is fixed within the common one, and a layer of sand is laid at the bottom between them. The object of this sand is to absorb the moisture which may be contained in the air between the two windows, else it might be deposited on the windows and dim the glass. Both windows are caulked round the edges with tow, and one square of glass in each window is made to open by means of a hinge, so as to admit fresh air when required. The extra door which is put up at the entrance of the principal apartments is thickly wadded with a kind of hair-cloth, so as to shut in a completely air-tight manner.

Dr. Granville considers a Russian stove, or *petch*, to be "one of the greatest luxuries of civilized life that can be found in cold climates. It is by far a more rational and effectual mode of warming a house, than either the coal-grate of England, the blazing hearth of France, or the iron-stove of Germany. It supplies the best substitute for the genial warmth of summer within doors, and affords an equable degree of heat so universally spread in every part of the room that when the external air has been at 20° Fahr., I have gladly remained without any other than the lightest dressing gown, in my room, taking my station indifferently in any part of it, far from the stove, and frequently near a window, without any other than the most pleasing sensation of an equal warmth."—So very equable, indeed, is the warmth of the apartments shut in by double windows and warmed by a stove, that the inhabitants frequently sleep with only a single sheet on them.

The petch forms a principal article of furniture in each room. Frequently the stove is placed in the centre of the wall separating the two rooms, so as to warm both. The stoves are built of stone or brick, and cased with white porcelain: they are of great size, and extend to the ceiling. The internal arrangement is this:—There is a fire chamber occupying the lower part, and extends from front to back, being about a foot and a half wide, and two feet high; in this the wood is burned; and it is closed by an iron door. A tube within carries off the smoke and soot of the burning wood, and other tubes convey the heated air round every part of the surface of the petch, so as greatly to heat the brick and porcelain. The mode of "keeping the fire in," is totally different from ours. Twelve or fourteen large billets of elm, two feet long and three inches thick, are put into the fire-chamber and kindled. The iron door being left open, a most intense combustion of the billets takes place, during which the pipe, serving as a chimney, is left open. When all the wood is burned away, the chimney is closed, the iron door is closed, and the highly heated air is completely shut in. So excellent are these arrangements, that the heated porcelain, brick, air, &c., of the stove, will impart an agreeable warmth to the apartment for forty-eight hours after the fire is completely extinguished. There is a small door communicating from the air of the room to the heated air in the stove; this door is kept open or shut, according to the temperature required.

Such is the general nature of the Russian stove,—an arrangement so remarkably different from the open fireplace of an English house, that we could scarcely conceive the effects of it, were it not that within the last few years many improvements have taken place in the modes of warming English dwellings, chiefly through the philanthropic exertions of Dr. Arnott.

If we proceed onwards to Moscow, we find the character of the dwellings much changed. Although still in European Russia, Moscow presents many of the features peculiar to Asia. It is situated more completely inland than almost any large city in the world, and is so far removed from the countries of western Europe, that it partakes of but few of their characteristics. Its palaces are of immense size and grandeur, as this city is the principal residence of the great Russian nobles. The houses of the mercantile classes present a singular mixture of Asiatic and European construction, for Moscow is the mart through which the treasures of the East are diffused over Russia generally. The Chinese, the Turk, the Greek, the Tartar, the Calmuck, the Persian,—all visit and inhabit Moscow, for commercial purposes.

A few more words, and we must then quit the countries of Northern Europe. Mr. Laing gives a graphic picture of the domestic arrangements and modes of employment, in the houses of the respectable inhabitants of Norway. The family room, or hall, is sprinkled with fresh bright green leaves, which have a lively effect: everything is clean and shining: an eight-day clock stands in one corner, and a cupboard in another; benches and straight-backed wooden chairs are arranged round the room; and all the family occupations are going on, and exhibit curious and interesting contrasts of ancient manners with modern refinements. The process of carding wool and flax is conducted in one corner: two or three spinning wheels are at work near the stove; and a young lady will get up from these old-fashioned occupations, take her guitar in the window seat, and play and sing, or gallopade the length of the room with her sister. The breakfast is laid out on a tray at one end of this apartment, which is usually spacious, occupying the breadth of the house, and lighted from both sides. This meal is taken, standing: it consists of slices of bread and butter, smoked meat, sausages, dried fish, with the family tankard, generally of massive silver, full of ale, and with decanters of French and Norwegian brandy,—the latter being drunk only by the gentlemen. While the gentlemen are walking about, conversing and taking breakfast, the mistress is going in and out on her family affairs, servants enter for orders, neighbours drop in to hear or tell news, the children are learning their catechism, or playing about; and the whole is such a lively animated scene, everything is so clean and orderly, and the manners of the people towards each other in familiar intercourse are so amiable, that the traveller who wishes to be acquainted with the domestic life of the Norwegians, will pass an hour very agreeably in the family room. Coffee, if drunk in the morning, is generally taken an hour before the family breakfast, and in the bed room.

5. Italian and Spanish Houses.

In leaving the climes of Russia and Norway for that of "Sunny Italy," we may naturally expect that the dwellings of the inhabitants, as well as the national character, present many marked features, arising partly from the early civilization and refinement of that people. The houses of the wealthy classes in Italy vary greatly with the position and nature of the towns. Under the general term, "Italy" we include the cities of Venice, Genoa, Milan, Florence, Rome, Naples, &c., although those cities belong to separate states, and are situated under different circumstances. We will therefore take a rapid glance at some of them in succession.

The mansions of the nobility at *Venice*, Forsyth tells us, are as various in their architecture as in their architects. Some display the light elegance of Sansovino; others the exuberant ornament of Loughina; and a few, the correct beauty of Palladio. They in general affect too many orders in front: each order has, absurdly enough, its full entablature; the lower cornices are as prominent as the upper, and

appear in profile so many separate roofs. In fact, the Grecian orders, being foreign to the manners and wants of a city built on the edge of the water, will never enter into its accommodation but at the expense of half their beauty and all their consistency. Most of the mansions have two gates, some three, in the middle of their fronts. On each side are two ranges of equal windows in the basement alone. Over the gates is a stately and decorated superstructure of balconies, arcades, and gigantic windows, contrived for Venetian pageantry, and set in studied opposition to the general style of the front, which this wide vertical breach divides into two. The windows are generally arched: in some mansions this arch is circular: in others it forms arabesque curves of contrary flexion, which finely contrast with the flat mass of wall. In some, even the Gothic church-window has been adopted. A great disfigurement to these mansions are the chimneys which are made prominent objects on the top. In former times the outsides of the Venetian houses were painted: even such men as Paul Veronese and Tintoretto were employed in that mode of decorating the houses: but in later times this custom has disappeared. The ceilings of the apartments are always decorated. But since the downfall of the Venetian republic, many circumstances have tended to reduce the splendour of the city. The large mansions, palaces, indeed as they may be termed, have many of them been deserted, sold, and dismantled, during the present century.

Let us now cross the north of Italy to *Turin*. This city is the capital of Piedmont, and is more regularly built than the generality of Italian cities; it has rather a modern appearance, and is very clean, an advantage gained by the flowing of much clean water through the streets. No mean suburbs, and no mouldering walls, deform its entrance. It contains spacious and regular streets, which intersect each other at right angles, and which lead to a grand square or *piazza* in the middle. Through the principal streets, each side exhibits a long and regular line of porticoes, presenting many beautiful specimens of architecture; while the balconies above them, canopied with light draperies, have a very pleasing appearance. The houses and hotels generally are said to present a very elegant appearance. It has been stated, however, as a strange instance of carelessness, that in many façades of very handsome architecture, the holes are still left gaping, which supported the scaffolding at the time of their erection.

Proceeding to the southward, we come to the famed city of *Florence*, the mansions of whose wealthy inhabitants are distinguished for much splendour. It has been observed by Mr. Bell, that in the best streets "each house is a palace; and a palace in Florence, is a magnificent pile, of a square bulky form, with a plain front, extending from two to three hundred feet, built of huge dark-grey stones, each measuring three or four feet." The general structure of these mansions is this coarse rubble work rising to a height of twenty or thirty feet from the ground. A stone seat runs the whole length of the front, which used, in former times, to be occupied by the dependants of the family, who frequently slept there, sheltered from the sun by an overhanging cornice. Large iron rings are sometimes seen fixed into the wall: these were formerly used to contain the banners of the owner,—to hold flaming torches,—and to fasten horses to. The lower range of windows are grated and barred with massive iron frames, which present much of the melancholy effect produced by prison windows. On the second story is a plain and simple architrave: the windows are high and arched, placed at a considerable distance apart, and from ten to fifteen in number, according to the width of the building. The third story resembles the second in its plainness, and in the number of its windows. The roof is flat, with deep cornice, and bold projecting soffits, which give a grand and magnificent effect to the whole edifice. The chimneys are grouped into stacks, the tops of which, increasing in bulk as they rise in height, resemble a crown. The slates with which the chimneys are built are ranged so as to act as ventilators. Two or three steps lead up to the porch of the mansion, the doors of which are studded with iron, both for the sake of strength and of ornament, and the entrance is an arched massive iron gate. The gates open into a court, the base of which is surrounded by a high arched colonnade, supported by marble columns. Entering from the court, a great staircase leads to a suite of noble chambers, halls, and saloons, hung with silks, and richly adorned. The ceilings are lofty and finely painted; the beams being displayed, and carved, ornamented and gilt. The arcades of the court support the galleries, which, in former times, were generally filled with fine paintings, statues, and vases.

"In such palaces," says Mr. Bell, "the rulers, the magistrate, the noble, and the merchant dined, surrounded by their family and dependents. The manner of the times bore a character of manly simplicity, which, singularly contrasted with the splendour of the rich possessions, and the importance of their political sway among nations. Their guests were seated, not by rule, rank, or birth, but in the order in which they happened to arrive. At the board of Lorenzo the Magnificent, whose court was adorned by the most distinguished men of the age, as well in letters and science as in rank, Michel Angelo and other celebrated artists were often seated next to himself. Nor did these habits lessen the respect or deference of the dependents, as we may judge by the picture given by Cellini and other writers of those days. From this combination of princely power and pristine simplicity, inducing that familiar intercourse of lord and dependents, rich and poor, arose those friendly greetings, those salutations in the streets, which to this day excite the admiration of strangers."

Proceeding southward from Florence, the two great cities which present themselves on the western edge of Italy are Rome and Naples,—two cities which have scarcely one feature in common,—which differ indeed as much as if they belonged to countries altogether different. At Rome there is a sober grandeur pervading everything. The visitor is in the heart of the Roman world, surrounded by innumerable evidences of past ages. There may be, and are, bigotry and superstition at Rome, but there is very little frivolity. The character of the inhabitants, and the nature of their houses, have a kind of gravity about them that does not fail to strike a stranger. In Naples it is altogether different: the fronts of their houses, like their hearts, are all window: all is light, joyous, frivolous, and—vicious. The Neapolitans, unlike other people, do not attempt to conceal their vices: they make fun of everything; they manage to extract a laugh from subjects which to others would seem to demand serious attention. The fine arts are at a lower ebb in Naples than at any other city in Italy, so that what refining influence there may be in such arts is lost to the Neapolitans. In Naples, says Mr. Forsyth, "even the lowest class enjoy every blessing that can make the *animal* happy,—a delicious climate, high spirits, a facility of satisfying every appetite, a conscience which gives no pain, a convenient ignorance of their duty, and a church which ensures heaven to every ruffian that pretends to faith. Here tatters are not misery, for the climate requires little covering; filth is not misery to them who are born to it; and a few fingerings of macaroni can wind up the rattling machine for the day." The inhabitants of Florence stand midway between those of Rome and of Naples, and perhaps avoid many of the vices of both. And in that particular feature in which we have at present to do with them,—their dwelling,—the same will apply. Give a little more sombreness to the mansions of Florence, and you have those of Rome: give them more frivolity, and you have those of Naples.

The houses of Spain present that mixed character which is likely to result from the successive conquest of a country by different nations. Spain is one of the countries in Europe (the other being Turkey) which have been under the Mohammedan yoke, and this circumstance has not failed to impart to the dwellings of some parts of Spain that peculiarity which is seen in most Mohammedan dwellings;—we mean, a large central court surrounded by buildings on every side. As we shall shortly describe these courts somewhat minutely, we will not dwell on them here. Those parts of Spain which were able to resist the Moorish invaders, have retained most of the features which distinguish Italian and French houses of the middle class,—with the addition of a gloomy appendage called a *jalousy*, the nature of which we shall hereafter describe.

The houses of Seville are thus described by Standish:—"The houses of this town are perhaps the most picturesque in the world. You enter them from a porch, or zaguan, to a court, round which are marble columns, and these are found not only in the principal, but even ordinary habitations. The arches between the columns support galleries or rooms above. It is usual to inhabit the ground-floor in summer time and the upper story in winter. In the former season a canvass veil is placed over the whole court during the heat of the day, and removed at night, when the family collect together, to receive friends under the galleries, or in the courts, whilst flowers are placed round a fountain, which generally plays in the centre, the courts being often paved

with marble. The lamps which hang around the walls in symmetrical arrangement, the bubbling of the water, the fragrance of the flowers, the mystical green branches which spring up in every direction from large earthen pots, give an appearance of romance, which, added to the broken lights, the irregular architecture of the buildings, and the white Ionic columns of marble, present, in every house, a varying subject for the draftsman or the painter. To the sides of the walls are attached mirrors, which reflect all around, and pictures, amongst which were once works of art that would delight the connoisseur. It has been calculated that eighty thousand marble columns exist in Seville, but there assuredly must be a much larger number, for many are buried in the walls, others covered with plaster, and on an average every house possesses six."

From Spain we proceed to that country of Europe which approaches nearest to an Asiatic character, we mean Turkey. By speaking of the capital, Constantinople, we shall form a sufficient idea of other parts.

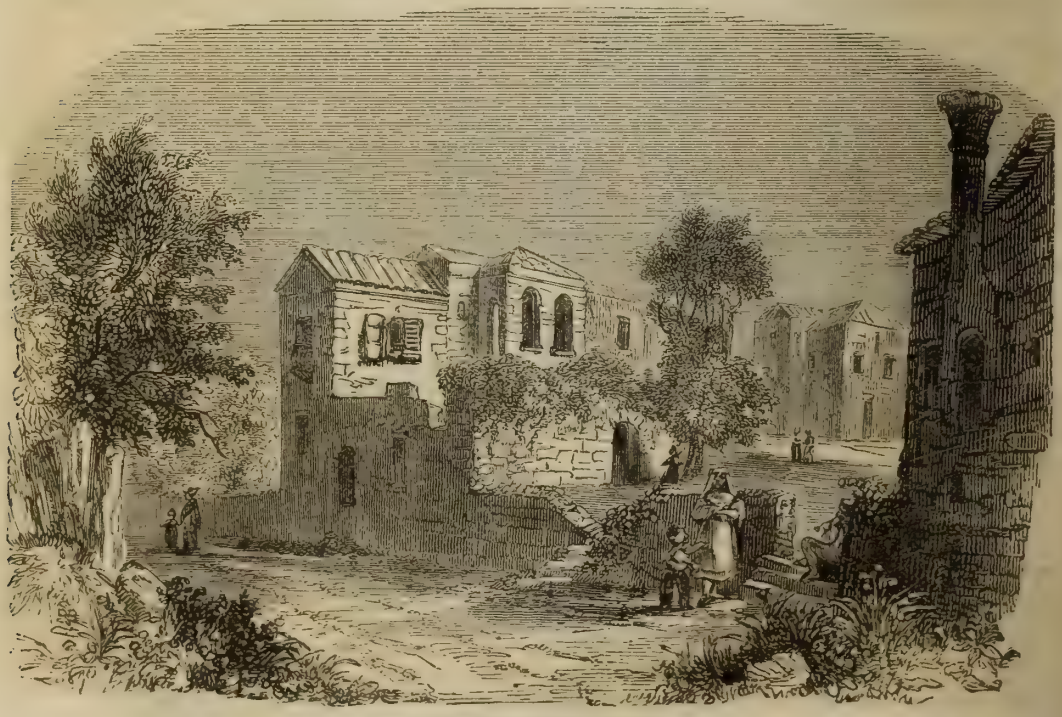
6. Houses of Constantinople.

Constantinople, like most Mohammedan cities, is more distinguished for its mosques than for its private dwellings. The general character of its streets is narrowness and meanness; but the nature of the houses depends on the locality. The houses in the suburbs called Galata and Pera, in which most foreigners who visit the city take up their residence, are inhabited by the foreign ambassadors and other distinguished strangers, and are of course built in a style somewhat worthy of their reception. But the generality of the houses are said by Wheler to be low, and to be built of wood, so that fire frequently makes much devastation among them, espe-especially from a custom which the Turks have of smoking in bed; and it is also said that these fires are not unfrequently the work of incendiaries, who are actuated by the hope of pilfering. The destruction of the houses themselves is no great matter, for the rebuilding costs but little, and the supply of timber is very abundant; but the burning of merchandize which often accompanies that of the house, is a distressing disaster to numerous families. When a fire commences, the Turks are frequently obliged either to pull down or to blow up several houses, in order to break the communication from one part of the town to another: otherwise the whole would be destroyed.

A curious class of houses in Constantinople are the *hans*, of which there are about two hundred. These hans are a kind of large lodging house. They are immense stone buildings, inclosing a central square. The court is often ornamented with a grove of trees and fountains. The building, besides warehouses and stables on the ground floor, has three stories or galleries, one above the other, with ranges of small chambers, each of which is kept neat and clean by the servants of the *han*, and fitted up for the time with the carpets and slender wardrobe of the several occupiers. These *hans* are usually for travelling merchants; but are sometimes occupied as counting-houses by Turks who reside at Galata, Pera, or other suburbs of the city. What would appear remarkable to an Englishman accustomed to the commercial arrangements of hiring dwellings, &c., is that these *hans* are open to all strangers free, with the exception of a small fee to the servants. They are for men of all countries, and of every religion,—the poor and the rich,—and they have had the good effect of drawing merchants and merchandize to Constantinople. They belong to the Sultan, and the expense is defrayed by him. The private dwellings in Constantinople are not of such a description as to merit much notice here. They are chiefly distinguished for their flat roofs, by which they are known at a distance from the mosques, chapels, hans, bazaars, and baths, almost all of which have domes or cupolas. Adrianople, another city of the Empire, is the principal place of intercourse with merchants from Northern Europe, and the dwellings present that mixed character which almost inevitably results from such intercourse.

We have now conducted the reader to warm climates, among whose natives the industrious habits of Europeans are but little exercised; where the light of Christianity has as yet but dimly shone; where woman is known only to be degraded; and where polygamy has severed the lovely ties which join man, wife, and children in domestic union. These features of national character are observable in a fearful degree throughout the whole extent of Northern Africa, from Morocco to the Isthmus of Suez;—throughout Asia Minor, Syria, Arabia, Persia, Georgia, Circassia,—and indeed, we may almost say, throughout the whole of Asia southward of the cold regions of Siberia. In nearly all these countries, the houses of the inhabitants of higher and middle rank have this peculiarity which distinguishes them from the houses of Europe, that the apartments for the females,—called collectively the harem, or haareem,—are situated in a distinct part of the house, and are usually secluded with a jealousy which makes their inmates completely prisoners.

In another Supplement we will, endeavour to convey a general notion of the dwellings in these countries.



PETRARCH'S HOUSE AT ARQUA.

LONDON. Published by JOHN W. PARKER, West Strand, and sold by all Booksellers.

THE

Saturday Magazine.

Nº. 600. NOVEMBER 6TH, 1841 { PRICE ONE PENNY.

THE MILK-GIRL. FROM A PICTURE BY GAINSBOROUGH.

GAINSBOROUGH AND HIS WORKS.

I.

Thomas Gainsborough, who so greatly excelled among artists in the department of landscape-painting, was born in the year 1727, at Sudbury, in Suffolk. His personal history is, however, very defective, though his works are full of the truest nature, and the purest fancy.

Like the best of the poets, he was born a painter. He has said of himself, that during his boyhood, though he had no idea of becoming a painter, yet there was not a picturesque clump of trees, a single beautiful tree, hedge-row, stone, or post, for some miles round about the place of his nativity, that he could not well and perfectly delineate with his pencil.

Thus, the love of his art led him constantly among the ancient trees, the winding glades, and the sunny nooks. Scenes are still pointed out where he used to sit and fill his copy-books with pencillings of flowers and trees, and whatever struck his fancy; and it is said that those early attempts of the child bore a distinct resemblance to the mature works of the man. At ten years old he had made some progress in sketching, and at twelve he was a confirmed painter.

We are here tempted to narrate a story of one of his early works. On one occasion he was concealed among some bushes in his father's garden, making a sketch of an old fantastic tree, when he observed a man looking very wistfully over the wall at some pears, which were hanging ripe and tempting The slanting light of the sun happened to throw the eager face into a highly picturesque mixture of light and shade: the young artist immediately drew a likeness of him, much to the poor man's consternation afterwards, and much to the amusement of his father, when the man was charged with the design of robbing the garden, and shown how he looked at the time. Gainsborough long afterwards made a finished painting of this Sudbury rustic,—a work much admired among artists under the name of Tom Peartree's portrait.

Though his early sketches made in the woods of Sudbury were numerous, few of them are now known to exist. As his reputation increased, he became less satisfied with such early proofs of talent, and gave them liberally away among friends and visitors. To one lady, we are told, he gave twenty of them: she pasted them on the walls of her apartment, and, on her leaving London, they became the property of the next inhabitant.

His talents being now universally acknowledged, his father was persuaded to send him to town. It appears that he was not more than fourteen years of age when he left Sudbury for the metropolis, and that he studied under Hayman, one of the companions of Hogarth. In the course of time he seemed to feel that no landscapes worthy of the art had yet made their appearance, and that his own works were essentially different from those on which the other artists were engaged. This consideration probably induced him to devote himself rather to landscapes. He remained in London four years, and acquired skill and experience in the management of colours.

Being now in his eighteenth year, he is spoken of as having acquired reputation by his talents, as evincing a modest gaiety in his conversation, and extreme elegance of person. It happened, in one of his pictorial excursions among the woods of Suffolk, that he sat down to make a sketch of some fine trees, with sheep reposing below, and wood-doves roosting above, when a young woman entered unexpectedly, but very *à-propos*, upon the scene, and was at once admitted into the landscape and the feelings of the artist. This young lady was Margaret Burr, of Scottish extraction, and then about sixteen years old, who not long afterwards became his wife.

Soon after this event Gainsborough removed to Ipswich, where he became acquainted with Thicknesse, the governor of Landguard Fort, in the following curious manner. The governor was walking in the garden of a friend, when he perceived a melancholy-faced countryman, with his arms locked together, leaning over the garden wall. He pointed out the man to his friend, who, with assumed gravity, observed that the fellow had been there all day, that he was to be pitied, as being either mad or miserable. The governor then stepped forward, with an intention to speak to the madman, and did not perceive till he had got close up, that it was only a *wooden* man, painted upon a shaped board.

The governor was informed that many had been equally deceived, and was subsequently introduced to the painter of it. Gainsborough received him in his painting room, where, he says, he found many so-so portraits, but some charming landscapes. George the Second, visiting Harwich shortly after, our artist was employed by Thicknesse to paint a view of a yacht regatta scene. The picture was engraved, and contributed to make the name of the artist known. Soon after this he went to Bath, where he chiefly occupied himself with portrait-painting, for the sake of a ready means of livelihood. He got a considerable quantity of employment. His portraits were executed at first for five, and then for eight guineas each,—afterwards forty for a half-length, and a hundred for a full-length. He was occasionally very fond of fun. Once a rich citizen sat to him for his portrait, "with a new five guinea powdered bob-wig on." Gainsborough found something so comical in the look of the citizen, that he burst out into a roar of laughter, of course gave offence, and lost his commission.

Before his arrival at Bath he had been employed by the governor to paint Landguard Fort, including the neighbouring hills, and the port of Harwich. An engraving of this picture spread abroad the name and fame of Gainsborough. Of the original painting of the fort nothing now remains: it was hung on a wall built with mortar mixed with sea-water, and so perished.

Gainsborough and the governor were both of them fond of music, as well as of painting, so that, during the years of their early acquaintance, they seem to have been mutually pleased with each other's company,—the patron being kind and the painter obliging; but, when the fame of the latter began to draw the attention and favour of the public, he scrupled less to let loose his natural disposition, which was of an independent and impetuous cast. The consequence of this spirit was, that the governor soon took offence, and the painter was less and less anxious to soften down the causes of offence. Governor Thicknesse has been accused of misrepresenting and vilifying our artist in his memoirs of his early friend, but in the following paragraph, at least, we look in vain for the spirit of detraction:—

Nature sat to Mr. Gainsborough in all her attractive attitudes of beauty, and his pencil traced with peculiar and matchless felicity her finest and most delicate lineaments, whether it was the sturdy oak, the twisted eglantine, the mower whetting his scythe, the whistling ploughboy, or the shepherd under the hawthorn in the dale,—all came forth equally chaste from his inimitable and fanciful pencil.

When the common topic of the weather is introduced in conversation, or presented to the mind, the agriculturist will naturally refer to its influence on vegetation; the physician to its effects on the health of the community; the man of pleasure may think only of its reference to the sports of the field; the philosopher may endeavour to seek for its cause in some preceding atmospheric phenomena; and another person of certain habits of observation may compare or contrast it with the weather of the same period in a preceding year. Thus, in five individuals the same topic may give rise to five trains of thought, perfectly distinct from each other, yet each depending upon a very natural and obvious principle of suggestion.

BRUNELLESCHI, AND THE CATHEDRAL OF S. MARIA DEL FIORE, AT FLORENCE.

II.

In 1420, the most celebrated architects of Europe again assembled at Florence. Brunelleschi was included in the number, and he flattered himself with the idea, that this grand convocation would supply him not so much with competitors, as with worthy witnesses of his triumph.

Whoever will reflect (says Quatremère de Quincy) on the existing state of the building art, reduced by all Europe to the conceptions and processes of the Gothic, to the entire exclusion of the architecture of ancient Greece and Rome; whoever will think of the novelty of a vault of such lofty dimensions, and of such a diameter, that it has never since been surpassed, need not be astonished at the weakness, or the absurdity of the projects which were presented to this numerous assembly; it seemed like a struggle for superiority in ignorance and marvellousness. Some proposed to raise up pillars, whence should branch off arcs as supports to the timber work destined to bear the weight of the cupola: others advised a great pillar in the middle as a central support: some recommended them to build up a mountain of earth by way of scaffold: they were to mix a large number of pieces of money in this earth, and when the work was finished, they might trust to the cupidity of the multitude to carry off this natural scaffold.

Brunelleschi had not foreseen that true knowledge, if put upon its trial before ignorant judges, must be condemned: since, if it gained the cause, the judges would condemn themselves. When he presented his project, they railed at it as absurd: they did not understand him when he proposed to erect two cupolas, the one within the other, so as to leave a large empty space between them; but they laughed outright and called him *madman*, when he declared that he would employ no interior support,—no timber-work, to centre these immense vaults.

Brunelleschi believed for a moment that the fruit of so many years of toil was all lost. This assembly had only muliplied the doubts, and augmented the irresolution of the judges. Brunelleschi saw that nothing was to be gained by stormy debate: his strength lay in his own and true genius; and he declined further to risk the exposure of the one and the ridicule of the other, before the prejudices of blind and partial judges. He therefore began to attack separately those members of this assembly, which as a united body he could not move. He encouraged some; persuaded others; and half revealed to all the secret of a very simple method, which no one suspected on account of its simplicity. At the next meeting he experienced no more taunts and contradictions.

The elements of Brunelleschi's scheme were quite unknown to his competitors. Accustomed to the lightness of form, and construction of the Gothic, they only knew how to raise to a great height, by means of buttresses, walls hollowed out in a variety of ways; and groined vaults formed of small courses of masonry, where the whole thrust was divided and received by many points of support. But it was above all things necessary, in the erection of the projected cupola, to establish a new system of construction, to employ more powerful materials, more massive and simple points of support; so to act, that the construction, in this vast circumference, should of itself act as scaffold and point of support. Brunelleschi's model would have proved how all this could be done; but he was content to silence his opponents by argument alone: he did silence them, and obtained the suffrages of his judges; but his employers, in the absence of his model, would not allow him to proceed with the work to a greater height than twelve fathoms.

When truth is once established it is firm and immoveable: truth cannot be in opposition to itself, but envy and detraction often exert their nefarious powers to obscure it. It was whispered about that the glory of Florence was sullied by intrusting so magnificent a work to one single architect. A colleague was, therefore associated with him: this was Lorenzo Ghiberti, of whom Brunelleschi had formerly been the rival, was still the enemy, and had refused to become the associate. This man accepted the inglorious participation in a work to which he had contributed nothing, and from which his incapacity alone would have been sufficient to exclude him.

Brunelleschi became furious: the first impulse of his indignation prompted him to abandon the work and his native city for ever; his friends, however, managed to pacify him, and when he had cooled down, his course of action again showed his sagacity. He feigned illness, and thus left Ghiberti sole master of the works, in which situation Brunelleschi well knew that his incapacity for the task would quickly be displayed. Nor was he deceived. The frequent embarrassment and indecision of Ghiberti soon betrayed his ignorance, and some great and palpable errors into which he fell, opened all eyes to the perception of it. After great turmoil and difficulty, therefore, Brunelleschi was nominated sole architect and director in chief of the whole edifice.

From this moment he devoted his whole energy to the work. The smallest details did not escape his vigilant foresight. He directed each workman, but kept in his own hands the choice and destination of materials for his work. Not a stone, not a brick, was placed, without having been first examined by him. Each day he invented new machines, in order to simplify the work of building, or to abridge its operations. He saw, that in proportion as the building rose in height, the workmen lost their time, and expended their strength in fatiguing journeys. He remedied this inconvenience by establishing upon the vault of the church commodious shelters, and furnishing them with all the necessaries of life.

He had by this time displayed his model, by means of which his secret became universally known. No one was weary of admiring the rare skill with which the artist had comprehended all the details, small as well as great, of the construction; the foresight with which he had calculated the internal communications and supports, the openings for the admission of light, the ascending slope, the balustrades, the conduits for carrying off the rain, &c.; ven the minutest details did not escape him. But the greatest admiration was excited by the form and distribution of his materials, and by the mode of their combination, whereby that just system of equilibrium was established which, by mutual pressure produced mutual support, and united the several parts of this splendid dome into one grand whole.

Brunelleschi had the satisfaction before his death to see his cupola completed, with the exception of the external tambour, and a few ornamental details, which he could afford to leave another less gifted individual to complete.

This great and celebrated enterprise, in spite of the multiplied embarrassments and cares which it procured him, was far from occupying the entire life of Brunelleschi. His celebrity caused his assistance to be sought for in many of the great works which were executed in his time, both in civil and in military architecture. Among other productions, we may mention the church of San Lorenzo, and the celebrated Pitti palace, both at Florence.

Brunelleschi died in the year 1444. His remains were interred in Santa Maria del Fiore, with much pomp and ceremony; a monument rising high above his remains that will perpetuate his name, and give to his memory the celebrity which that splendid edifice, after the lapse of nearly four hundred years, still continues to enjoy.

A COUNTRYMAN was shown Gainsborough's celebrated picture of *The Pigs*—"To be sure," said he, "they be deadly-like pigs, but nobody ever saw three pigs feeding together but what one on'em had a foot in the trough."—JESSE'S *Gleanings*.

WHAT IS BLIGHT?

Larva of Aphis rosæ. *Aphis rosæ.*

The pursuits of the farmer, the gardener, and all those who are engaged in rural occupations bring them so much in contact with the productions of nature, that just in proportion as they are interested in understanding their qualities, should we imagine them to be acquainted with the different vegetables grown or reared for economic purposes; to understand the cause of the injuries they are subject to; and to devise efficient remedies for those injuries. But it happens unfortunately that these persons are for the most part quite ignorant of the natural history of the objects of their care; they adopt a certain routine of practice which they have been taught; but, as they are ignorant of the science of their processes, they cannot vary them to suit the exigencies of varying circumstances; and thus they are exposed to frequent loss and inconvenience. If they gather in an abundant crop, they are satisfied, and seek not to inquire why it was more or less abundant than that of succeeding years: but, if the crop fail, they attribute the loss to the attacks of birds, of insects, and above all to the influence of *blighting* winds.

In rural pursuits there is probably no word so much used as *blight*. When the wind is easterly and the country clothed in blue mist the farmer looks anxiously towards his crops and says, there is "a *blight* about." The gardener looks at the yellow sickly appearance of his fruit trees, their leaves or blossoms curled up and destroyed and refers this to the effects of *blight*. The hop grower sees his expectations defeated by myriads upon myriads of green insects which completely overrun and desolate his grounds, and he calls this a *blight*. The planter perceives innumerable small caterpillars swarming on his trees where the day before not one was visible: he remembers that an easterly wind has arisen, and calls it a *blight*. Since these and other similar misfortunes receive the indefinite and mysterious name of *blight*, it may be useful, as far as our present knowledge of the subject extends, to afford a full answer to the question *What is blight?*

The notion that certain small insects, such as caterpillers, aphides or plant-lice, are propagated or at least diffused by certain winds or states of the air, called blight, has been generally credited not only by intelligent persons, but also by many good naturalists up to a very recent period. Mr. Main says, that when there is an easterly wind, attended by a blue mist, the latter is called a blight, "and many people imagine that the aphides are wafted through the air by this same mist." Mr. Keith says, "The farmer supposes these insects are wafted to him on the east wind, while they are only generated in the extravasated juices, as forming a proper nidus for their eggs." Dr. Mason Good says, "That the atmosphere is freighted with myriads of insect eggs that elude our search, and that such eggs, when they meet with a proper bed, are hatched in a few hours into a perfect form, is clear to any one who has attended to the rapid and wonderful effects of what, in common language, is called a blight upon plantations and gardens."

It seems to be generally admitted that *insects* are connected with blight, and that these insects appear only during certain states of the air. If, therefore, it be admitted that the wind has any thing to do in the production of blight, one of three things must occur: (1,) the wind must produce this blight spontaneously: (2,) the eggs from which the blights proceed must be wafted by the wind to a given spot: (3,) the prevalence of certain winds must have an influence in giving birth to certain insects inclosed in eggs previously deposited by parent insects upon the spot where the blight is seen.

That any state of the air or wind is adequate to the production of animal life, is a proposition so absurd in the present state of our knowledge, that we pass it by as altogether unworthy of serious notice. But that plants may be blighted or withered up by dry parching winds is fully admitted, for when a plant first produces its young branches and leaves, these parts are tender and succulent, and lose their moisture very readily, so that a certain state of moisture and warmth in the air is necessary to effect the solidification of the newly-formed tissue; and if this state be maintained the branches and leaves become fully formed, and no blight appears. But if, as it often happens in this country, a dry easterly wind prevails, the young plants part with their moisture so rapidly that their roots cannot maintain a proper supply, and the tissue becomes dried up and scorched. Such is blight. The only apparent remedy is to supply moisture to the plants so attacked by washing them frequently with a syringe. Under such circumstances of blight it is not uncommon to burn large quantities of wet litter to the windward of the blighted plants, under the supposition that the smoke will destroy the insects which are the imaginary cause of the mischief. We need hardly say that if any good arises from this practice, it must be attributed to the moist warm smoke which envelopes the plants, most probably without destroying a single insect.

We have the evidence of the microscope to assure us that every drop of water teems with life; but it is only a fancy, quite destitute of such ocular evidence, which encourages us to believe the air to be equally prolific. It is difficult to imagine how the eggs of insects can be found in the air, for those of every known species are much heavier than air, and moreover the parent insects display the greatest anxiety to place their eggs upon or near the proper food of the young progeny. "To commit them to the winds," says an accurate observer "would be a complete dereliction of this invariable law of insect economy." And supposing we admit that the eggs are dropped by the mother insects while on the wing,

We must also admit (for there is no avoiding it), that they continue to float about, unhatched, from the end of the summer till the commencement of spring, at which time only the broods make their appearance. Yet when we consider the rains, snows, and winds to which they must be exposed for six or nine months, we think the hardiest theorist would scarcely maintain that a single egg could outweather these vicissitudes, and continue to float in the air.

Nor is it possible that these eggs can be taken up simultaneously by a strong east wind, and deposited on plants, trees, or other objects where a blight suddenly appears, because when the eggs are deposited, they are, with very few exceptions, enveloped in an adhesive cement which glues them to the spot where they were first placed by the parent insect. It follows, therefore, from the statement of these few simple and well-attested facts that the second proposition must be dismissed as untenable.

We now come to the third proposition, and admit at once that the action of certain winds, influenced by variations in temperature, and other meteorological changes, seems to be capable of calling into life and activity, as it were in an instant, innumerable insects, which, one hour

were concealed each within its minute egg, and in the next hour burst forth to join myriads of its kind in the work of destruction. It is generally considered by naturalists, that the eggs deposited in the preceding autumn, having been laid at the same time, and exposed to similar atmospheric changes, are necessarily hatched at the same time in the spring, when, in fact, intelligence is obtained by the inclosed grubs, from the peculiar state of the air, that the fitting time for bursting forth from the egg is arrived. We propose to speak of the aphides or plant-lice more particularly in a subsequent article; but should the reader find it difficult to believe that the vast numbers of blighting insects often observable on plants have proceeded from the eggs deposited the preceding autumn, we may state, that, in the case of the aphides, the fecundity is almost incalculable. Réaumur proved by experiment that one aphis may be the progenitor of 5,904,900,000 descendants during its life: that in one year there may be twenty generations. Mr. Rennie has counted more than a thousand aphides on a single leaf of the hop; and in seasons when they are abundant—when every hop-leaf is peopled with a similar swarm—the number of eggs laid in autumn must be, to use the words of Dr. Good, "myriads of myriads."

The reader will now have no difficulty in finding an answer to the question, "What is blight?" but we shall not perform our duty satisfactorily unless we enable him to convince himself that blight proceeds from insects the eggs of which were deposited by their parents the preceeding autumn, by searching for and finding such eggs during the winter months, so as to be able to watch the phenomena of blight during the following spring, or to apply a timely remedy to its destructive effects.

The word blight is often applied to the mischief done by all such insects as are injurious to vegetation: and therefore includes many insects of various genera. It will be impossible to speak of these within the short limits of the present article, but on future occasions we may notice them. At present we shall restrict our notice to the history of one species only, which has been carefully studied by Mr. Lewis, and detailed in the *Transactions of the Entomological Society*.

If during the winter months the young branches of the apple tree or the hawthorn be carefully examined, certain small round and slightly convex patches will be discovered. These patches are somewhat less than the sixth of an inch in diameter, and are usually attached to the outside of the branches. Each of these little patches is the work of a small white or lead-coloured moth, studded all over with black spots, popularly called "the small ermine." Each patch consists of a number of eggs, deposited in the month of June, covered with a glutinous substance which when newly applied is of a pale yellow colour, but from exposure to the weather becomes dark, and nearly resembles the bark of the branch. The eggs hatch in the early part of autumn, and the grubs remain confined during winter, at which time if the case be opened, a number of these little grubs, which are of a yellow colour, may be readily seen with the aid of a small magnifying glass. As soon as the trees begin to put forth their leaves, the grubs make their escape, and as they are yet in a feeble condition, and cannot eat the outer skin of the leaves, they burrow into them, where they are protected from the weather, and feed upon the pulp of the leaf. As they grow stronger, and perhaps also during some state of the air which is favourable to them, they gnaw their way out, and the anxious gardener, who has hitherto observed only the brownness of the leaves, caused by the burrowing of the insects within, but which he attributes to the withering effect of an easterly wind, is astounded when he perceives myriads of caterpillars swarming on the trees, and proceeding with alarming rapidity in their devastating course. The fact of their burrowing sufficiently explains the reason of this sudden appearance: it shows how one day not a single caterpillar may be visible on the trees, and the next, they may be swarming with larvæ of so large a size as so forbid the idea of their having been recently hatched. The webs so often seen covering the branches of apple trees, and the hawthorn of the hedges, are the work of this little caterpillar; which after a time becomes of a lead colour spotted with black, and when full grown spins an oblong white cocoon, within which it turns to the pupa; soon after, the moth hatches, and generally about the month of June, if it be a female, deposits her eggs in the way we have already mentioned.

The cuts which accompany this article are highly magnified representations of the larva and the perfect insect of the rose-plant aphis: the small line which accompanies each figure is the actual size of the insect.

Among the various remedies for blight the application of the spirit of tar to the bark has been greatly commended; but Sir Joseph Banks found it sufficient for the protection of his apple-trees simply to remove the rugged and dead old bark, and then scrub the trunk and branches with a hard brush.

PRAYER IN CHILDHOOD

Kneeling in the congregation,
Bending at the lonely shrine,
To the Lord of all creation,
Saviour of the world, and mine—
Though his mercies well may raise
Man to loftiest heights of praise,
And the sins of man should be
Seals of man's humility—
Yet how oft I find I'm still
Strong in a rebellious will,
High in pride, in fervour low—
Wherefore, wherefore is it so?

Thoughts, whose incense should aspire
From the altar of the heart,
Kindled at the sacred fire,
Faith, and Hope, and Love impart,—
Thoughts, to which celestial birth
In the spirit's depths seemed given,
With the grosser fumes of earth
Mixed, and marred, ascend to heaven,
Cold and lifeless, dull and slow—
Wherefore, wherefore is it so?

I can bend my backward gaze
To the dream of childish days;—
Oh! what else can childhood seem
Than a swift and happy dream,
Bright—while yet our sorrows sleep—
Whence at length we wake, and weep?—
Yes! I can point to early years
Memory's glass, though dimmed with tears,
And in thought once more survey
Times, when I was wont to pray
By the evening star's first shining,
Ere upon my bed reclining,
And when morn, with radiant finger
Smiting soft the curtained pane,
Bade those "slumbers light" not linger,
Which shall ne'er be mine again.—
Then indeed I *lisped* my prayer,
Yet my spirit seemed to share
Twice the warmth it now doth know—
Wherefore, wherefore is it so?

'Tis, when the heart is soft and young
That most to heavenly strains 'tis strung—
Ere yet the world's rude discord grieves
The song of heavenward hope it weaves;
Ere yet the world's cold fetter flings
Its burden on the spirit's wings,
And down with deadening influence weighs
The upward flight of prayer and praise;
Or thoughts that bind the soul in sin
Are fortressed into strength within;
Or idle sneer and impious doubt
In secret ambush lurk without,
And with a fiendish joy efface
The tender growth of early grace!——J. S. B.

THE STONE-QUARRIES OF EGYPT.

WE give this article the foregoing title, because it is our object to point attention to the localities which gave birth to those enormous masses of stone which have been, during former ages, distributed over the land of the Nile from south to north. These still remain; but, for the most part, show no relation to the soil where they are now found to exist. The enterprise and research of modern travellers have, however, discovered rational means of accounting for most of the works of art and might, by which any of the ancient nations of the world have signalized themselves in the view of the people of succeeding ages.

It is, for our present purpose, more correct and comprehensive to speak of the *land of the Nile* than merely of *Egypt*. The "valley of the Nile" is another elegant term for this wonderful region, which comprehends the countries of Egypt, Nubia, and Abyssinia. The river may be said to flow down from the Mountains of the Moon through Abyssinia, Nubia, and Egypt, into the Mediterranean Sea, or from south to north. Nubia and Abyssinia formed the Western Ethiopia of the ancients; and Egypt has always been considered to be divided into Upper and Lower; the Upper being southward and the Lower to the north; the latter comprising the Delta, near the sea.

Having thus spoken of the geographical character of the countries under our notice, we will now consider them in a geological point of view, restraining our observations, however, to the region properly receiving the name of EGYPT.

The land of Egypt affords to the notice of the geologist four distinct regions; three in the Upper Egypt, and one in the Lower.

1. The most southern, the *Granite* region, which extends from Philæ, through the cataract district to Syene. It affords besides granite, also *Syenite*, and some other crystalline primitive rocks. The finest granites and syenites, are red and highly crystallized; and are remarkable for their durability and the fine polish which they are capable of receiving. Colossal statues, pillars, obelisks, and even whole temples, are constructed of these beautiful rocks. Some of the pyramids are said to have been originally cased with slabs of granite.

2. The next, or *Sandstone* region, lies to the north of the granite, and extends from Syene, (Assouan,) northwards to Esneh, or over about one degree of latitude. This sandstone is by some authors referred to the *grès*, or sandstone of Fontainebleau, the paving-stone of Paris; by others, to the *molasse de Genève* of Switzerland; but all are agreed in considering it as a comparatively recent deposit. Its colours are white, grey, and yellow; it is very soft and easily worked, and the buildings constructed of it would probably not have long resisted the weather, had they not been covered with a coloured varnish. The great temples, and many pillars and obelisks, are of this sandstone; but it does not appear ever to have been used in building private houses.

3. To the north of the sandstone, but to the south of Thebes, is the *Limestone* region. This substance was formerly much used as a building material. The catacombs of Thebes are situated in this limestone.

4. The whole of Egypt to the north of the limestone, that is, the *Delta* region, is principally composed of *alluvium* (floating mud) deposited from the waters of the Nile.

It will be seen that the first three geological regions here spoken of belong to Upper Egypt, as likewise a part of the fourth.

Before speaking more directly of the quarries of Egypt, it may be well to observe that a quarry is an excavation in the ground, from whence are extracted marble, stone, or chalk, for the purposes chiefly of sculpture and architecture. The name appears to have been applied to such excavations from the circumstance that the materials obtained from them, are there *quadrated*, or formed into rectangular blocks.

All the materials before-mentioned have been employed in the formation of the massive works which yet remain to attest the magnificence of the ancient people of this country. The walls of most of the temples were constructed of sandstone, which appears to have been chiefly obtained from the quarries stretching along the banks of the Nile, in the mountains of Selseleh; but the obelisks and statues which adorned those temples are formed of Syenite or Oriental granite, drawn from the quarries in the islands of Philæ and Elephantine, and particularly from those vast excavations in the mountain-terraces about Syene. At Sais, in the Delta, we are told, there once stood a temple, formed of a single block of granite, which had been floated down the Nile on a raft from the quarry in Elephantine. Two thousand men were engaged for three years in the removal of this temple, which was more than thirty feet in length, twenty in breadth, and twelve in height; the stone was, on the average, about five feet in thickness. One of the pyramids is formed of limestone; a carbonate of lime, of a light gray colour; and the same kind of stone forms the interior mass of another pyramid, while the outside is covered with red granite.

The region of the granite, which may be distinguished by referring to the modern town of Assouan, extends from west to east, on both sides of the river; but the best specimens lie near the stream, and the granite loses its beautiful appearance the further we recede from the east bank towards the Desert. The red granite thus occupies only a small space, forming a kind of portal, or entrance, through which the Nile bursts into Egypt, forcing its way amidst innumerable isolated cliffs, which consist of the most beautiful rose-coloured granite. This red granite is known by its excellent colour, the magnitude of its crystallized component parts, and its hardness; owing to which last quality, it receives an exquisite polish. The rose-coloured feldspath, which sometimes approaches to a brick-red, forms about two-thirds of the mass: the intermediate spaces are filled with the sparkling mica and the glassy transparent-looking quartz. Hornblende is seldom found mixed with it. The Theban obelisks, and many other works of art, were made of this material.

In Upper Egypt, the dryness of the atmosphere, and the general steadiness of the temperature, have contributed, with the hardness of the material, to preserve the polished surfaces of the obelisks, and their more delicate sculptures, uninjured during the lapse of centuries: but those near the sea coast have had their surfaces decomposed by the action of the moist atmosphere.

Near the limits of the red granite are found several varieties, occupying a still more limited space, and forming a transition-series between this and the common granite. They differ from the red granite and from one another, both in colour, component parts, and the size of these component parts, some of which are very coarse, and others small and fine. We see in the existing specimens of Egyptian sculpture, that they often selected some of these varieties in preference to the red-coloured one.

The stone-quarries of Egypt and Nubia shew distinctly to the present day, the mode in which the stones were got out. In the face of the rock are seen a number of long horizontal lines, one above another: the vertical distance between any two adjoining lines shews the thickness of the piece cut out; while the length is clearly marked in several cases, either by the termination of the face of the rock on each side, or by a vertical mark on it, extending from one horizontal line to the next. The stones were taken out of the quarry just in the shape and size required, and were detached from the

mass one after another, by means of little wedges inserted in holes made on the two faces of the stone. Though this is a slow process, it is economical as far as the material of the rock is concerned, and was employed both in the granite quarries of Syene, and in those of Carrara, in the time of the Romans. At the latter place, it is the practice, at present, to blast the marble, by which about three-fourths of the material are wasted. The wedges used in Egypt were either iron ones struck all at once, or wooden ones which were moistened, so as to swell and start the stone from its position.

It appears that the catacombs and excavated temples, which are numerous in Upper Egypt, are, for the most part, the results of the quarries of which we have been hitherto speaking; that is to say, the quarried excavation became a catacomb or a temple*:—both being alike devoted to the interment of the dead.

At the quarry of Gartaas, in Nubia, about twenty-five miles south of Assouan, is a small chapel, supposed to have been for the use of the workmen. The doorway, as in the case of most of the quarries in these parts of the Nile, fronts the river, and forms the entrance to the long open galleries which conduct to the excavations. The quarries on the east side of the river, at Hadjar Selseleh, contain representations, cut in the stone, of the implements used in quarrying: two of them look like wedges, but differ somewhat in shape; and another is in form precisely like the modern lever, which is used by masons for raising stones. It has a circular top, which might be a kind of ring, then a horizontal bar or bolt, while the lower part is a truncated triangle, with the base forming the lowest part of the instrument. From the numerous inscriptions existing in these quarries, it is evident that they were worked likewise by the Greeks and Romans.

The sandstone quarries of Hadjar Selseleh furnished the chief materials for the temples, as the granite quarries of Syene (Assouan) did for the obelisks and colossal statues. The Egyptians were careful to cut out such pieces as suited their purpose best, from among the several varieties of sandstone; and it is as easy to find large unbroken masses of this substance as in the quarries of Syene. Beams for architraves, to the length of twenty-five or thirty feet, and large pieces suitable for colossal sphinxes of nearly equal length, were easily procured in these quarries. The stone is soft and very easily worked. This is shown in the case of the colossal sphinx-head of the British Museum, which suffers considerably from the damp atmosphere of our climate.

The vast sizes of the stones that were transported from the quarries of Syene, to the most remote parts of Egypt, may be inferred from the huge statues, obelisks, and monolith† temples, of which specimens now exist. At the present day, there is a large cubical block lying on the road, between the granite quarries and Syene, which, from some cause or other, has never reached its destination. It has sculptures on two of its vertical faces, and is more than thirty feet every way. In another place was observed a block for a colossus, about sixty-eight feet high. It is supposed that the larger masses of rock used in constructing temples, &c., were taken in the rough to the place where they were to stand, and there received their full shape and decoration; but that the smaller members of the architecture were completed, or nearly so, in the quarry.

The ancient Egyptian method of producing the obelisk was as follows: They marked out in a hill a stratum for the purpose; levelled the surface with digging tools; and then, with a chisel, cut some furrows or channels to define the opposite sides. These being excavated to a certain depth, they tore the obelisk from the rock by the aid of the wedges, of which, vestiges now remain. In a similar way are still cut in France pieces of granite, forty-five feet long and eighteen broad. It was easier to seat a colossus on its pedestal, than to deal with an obelisk; the former having a comparatively large base, and being less liable to snap asunder. The obelisks when cut were placed upon sledges, and drawn to the river, where, a vessel or raft, purposely constructed, was firmly tied to the shore; and a bridge being made out of strong beams, from the edge of the shore, or from steps cut in the bank, and being made to project as far as the raft, any weight, by means of rollers, could be transferred to it. The stone was thus conveyed by the river to any part of Egypt.

The Egyptians being contented with low plinths instead of stylobates, the obelisks were thus erected; they were dragged from the river along a causeway made of earth or stones, until the base of the obelisk impended over a hole made in the plinth. A tower of beams was then constructed, ropes tied round the top of the stone, and engines so disposed that it could be elevated. When it was raised to the perpendicular, it subsided into the cavity of the plinth by its own weight. In carving the figures the Egyptians seem to have used the same tools as the moderns; and they seldom used a pedestal for the obelisk.

* See two interesting articles on *Cavern Temples and Tombs*;—Nos. 53 and 61 of this work.

† The word "*monolith*" is from the Greek, and implies *the being made of a single stone.*

UNINVITED GUESTS IN THE DESERT.

All was activity and bustle to prepare the coming feast. The kid was killed and dressed with great dexterity and despatch; and its still quivering members were laid upon the fire and began to emit savoury odours, particularly gratifying to Arab nostrils. But now a change came over the fair scene. The Arabs of whom we had bought the kid had, in some way, learned that we were to encamp near; and, naturally enough, concluding that the kid was bought in order to be eaten, they thought good to honour our Arabs with a visit, to the number of five or six persons. Now the stern law of Bedawîn hospitality demands that, whenever a guest is present at a meal, whether there be much or little, the first and best portion must be laid before the stranger. In this instance the five or six guests attained their object, and had not only the selling of the kid, but also the eating of it; while our poor Arabs, whose mouths had long been watering with expectation, were forced to take up with the fragments. Besharah, who played the host, fared worst of all; and came afterwards to beg for a biscuit, saying, he had lost the whole of his dinner.—Robinson's *Palestine.*

CANADIAN FOLIAGE.

Both the spring and autumnal colouring of the vegetable world are richer and fresher here than at home. Vegetation, long oppressed by a severe winter, bursts at once into luxuriousness and liberty, with the apparent gusto of animal sensation, as if determined to enjoy the genial but transient summer to the utmost. In the autumn the juices are not dried up in the leaves by a slow sereing process, as in England, before they fall off shrivelled and discoloured, but the first smart night-frost in September changes the foliage at once, with much sap still circulating vigorously, into red, brown, yellow, or other tints, as if by a direct chemical or dyeing operation. All shall be green during our evening walk, and in the morning the aspect of the forest may be entirely metamorphosed, and we are presented with the most rich and varied picture of different but harmonious hues according to the nature of the leaf, its smoothness of surface, strength of texture, and the age of the branch from which it proceeds. The woods, at this season, present one magnificent and unrivalled mosaic painting. The birch and the white ash turn brown and yellow in a night; the butter-nut tree adopts a buff livery; the maple becomes of a rich blood red—every family has its own peculiar colouring, while the hardy pine tribe leaf defies the cold, and preserves its green unaltered amidst the general change. The nice grades of colour vary infinitely, according to the age and position of the trees, the quality of the soil, the earlier or later cold weather, the severity of the frost, with many other causes that have hitherto escaped observation.—*Trifles from my Portfolio.*

FRESH-WATER FISH. IX

THE GUDGEON, (*Cyprinus Gobio.*)

Loe, in a little boat where one doth stand,
That to a willow bough the while is tied,
And with a pole doth stir and raise the sand,
Whereas the gentle streame doth softly slide,
And then with slender line and rod in hand,
The eager bite not long he doth abide.
Well loaded is his line, his hooke but small,
A good big cork to bear the stream with all.
His bait the least red worme that may be found,
And at the bottome it doth alwayes lie;
Whereat the greedy gudgeon bites so sound,
That hooke and all he swalloweth by and by:
See how he strikes, and puls them up as round
As if new store the place did still supply;
And when the bit doth die, or bad doth prove,
Then to another place he doth remove.

THE present method of fishing for gudgeons is very similar to the picturesque description contained in the above lines quoted from *The Secrets of Angling*, a poem in three books by John Davers, or John Dennys, Esq., for it is uncertain to which of these gentlemen the poem is to be ascribed. The entry at Stationers' Hall, February 28, 1612, has only the initials J. D. attached to it; but Walton has no doubt that Davers is the real author.

The gudgeon is sometimes called the silvery olive carp: its upper lip is furnished with barbs, and the dorsal fin and tail spotted with black. One species only is known in this country, but probably another may exist. It is common in many parts of Europe and exhibits a striking instance of the power of fishes to accommodate their habits to various climates. This faculty is not so remarkable in marine fish because the temperature of the sea does not greatly vary in different latitudes; but the temperature of rivers must correspond with that of the soil and atmosphere through which they flow. Dr. Russell met with gudgeons in Syria; and Aristotle mentions them as being natives of Greece. They are common in Germany, where a smaller variety, called wapper, is also found.

The gudgeon is very common in our rivers, canals and still waters: it is found in greatest perfection and most abundantly in moderately swift rivers which flow over a gravelly soil. Their numbers are so immense that some naturalists have imagined them to spawn twice a year. It is most probable, however, that they spawn only once, but the time of spawning is different in different waters. The gudgeon spawns about May, but does not deposit its ova at once, but at distant periods extending through the space of about a month.

Some waters are more favourable than others to the growth of gudgeons. They are generally small fishes, seldom exceeding eight inches in length. Occasionally however they have been taken of larger size. Mr. Pennant notices one caught near Uxbridge that weighed half a pound. Mr. Daniel states that he had some in a pond of his own, and that their average weight was five or at most six to the pound. Gudgeons are often taken in the extensive waters of some parts of England in nets, nullies, keils, &c., for the purpose of baiting other fish, or for the markets. They are greatly esteemed as food, especially for invalids, and are reckoned to be very easy of digestion.

"They be scattered up and down every river in the shallows, in the heat of summer; but in autumn, when the weeds begin to grow sour and rot, and the weather colder, then they gather together, and get into the deeper parts of the water."—WALTON. The gudgeon is a ground feeder, as its barbs imply;—its food is water insects. small mollusca, and the spawn and young fry of other fishes.

Gudgeons are usually found in shoals; and will take almost any bait; so much so that a person who is easily imposed on by shallow devices is often called a gudgeon. Perhaps the most tempting bait is a small red worm as noticed in our motto; where the raking or the stirring up of the bed of the river is also noticed and is still adopted as an essential process in gudgeon fishing. The object of raking is to disturb the caddies, and various minute worms, water snails, &c., which lurk among the stones and gravel at the bottom of the stream and on which the gudgeons feed. The disturbance causes the fish to hasten to the spot for the purpose of getting an easy supply of food. Mr. Blaine says, that in the Thames as many as fifty dozen of gudgeons have been taken in a day.

A FIRST LANDING IN THE WESTERN IND.

THE charms of a tropical country, when novel, are calculated to make a delightful impression on the mind: and as we roamed along the lanes and cane-fields of Santa Cruz during the first few days after our arrival, we could easily conceive the pleasure enjoyed by Columbus and his followers, when the fertility and beauty of West Indian scenery first burst upon their view. Many beautiful productions of nature however, not indigenous, are now added to the catalogue of wonders which inflamed the imagination of Columbus.

Almost every plant we saw as we drove or rode about the country, from the largest tree to the smallest weed, was unknown to us, and formed the subject of a somewhat troublesome inquiry. It was a new world to us, as well as to its first discoverer; and several days must be passed amidst these scenes before one can obtain anything like a familiar acquaintance with the productions of nature. Splendid exotic plants, which would be regarded as rarities even in the green-houses of England and America, are cultivated in the little gardens of Santa Cruz; and the wild flowers are scarcely less attractive. Amongst them we observed large kinds of convolvulus, white and pink, yellow bell-flowers, scarlet creepers, bright blue peas of singular beauty; and, to crown all, the "Pride of Barbados," sometimes crimson, sometimes yellow, with butterfly petals, long pendant stamina, and acacia-like leaves, adorning the hedge in great profusion. The trees are for the most part bearers of fruit, and many of them are covered with luxuriant foliage. To select a few of the most remarkable, I would just mention the plantain and banana, (nearly the same in appearance,) with pendant leaves of vast dimension, and a profusion of finger-like fruit growing in clusters; the wild orange tree, covered at the same time with fruit and flowers; the lime, which lines the hedges, and is equally fragrant, producing in abundance a small kind of lemon the guava, with pink blossoms and pear-like fruit, also frequent in the hedge-rows; the mango, heavily laden with foliage, and with fruit in its season; the mammee, growing to a great size, and profusely covered with glazed dark green foliage; lastly, the tamarind, with its light feathery leaves and long pods, which contain the fruit used for a preserve spreading its branches far and wide, like the British oak.—GURNEY.

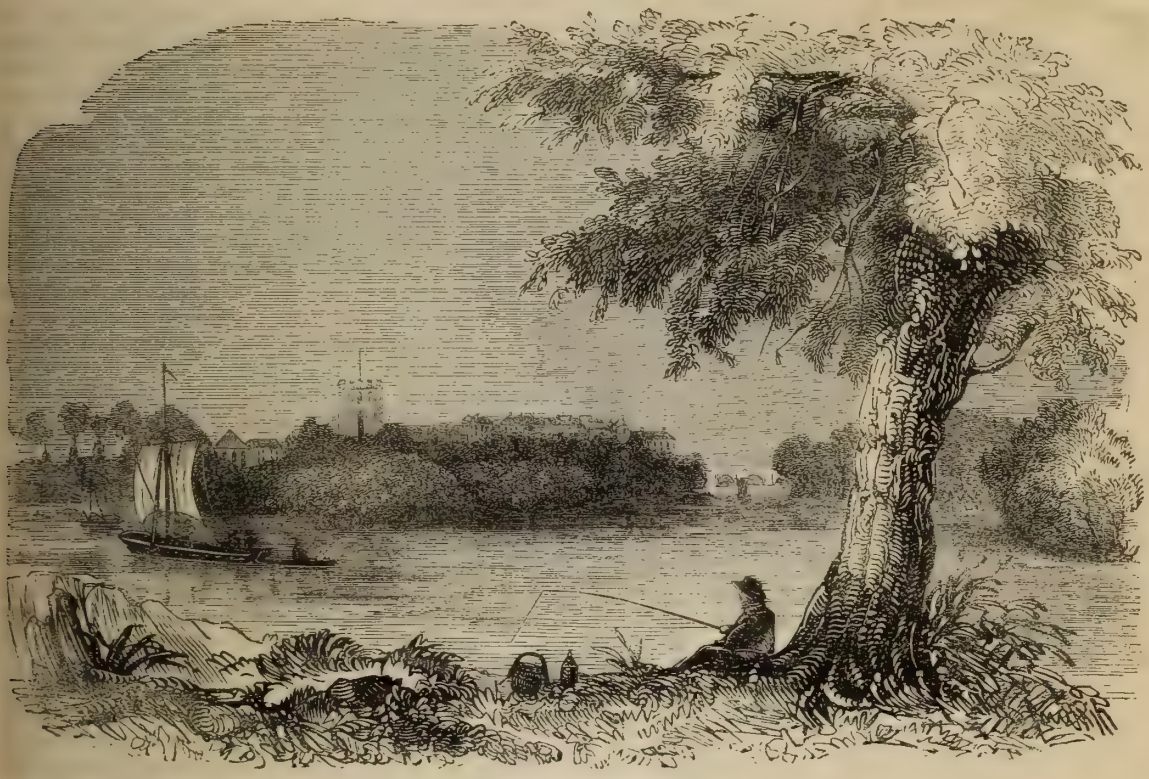
LONDON:
JOHN WILLIAM PARKER, WEST STRAND.
PUBLISHED IN WEEKLY NUMBERS, PRICE ONE PENNY, AND IN MONTHLY PARTS, PRICE SIXPENCE.
Sold by all Booksellers and Newsvenders in the Kingdom.

THE

Saturday Magazine.

No. 601. NOVEMBER 13TH, 1841. { PRICE ONE PENNY

THE BANKS OF THE THAMES. IX.



KINGSTON ON THAMES.

THE part of the river Thames to which we had conducted the reader in our last article, viz., the part contiguous to Hampton Court, presents a remarkably tortuous course, unfavourable to navigation, but greatly conducive to the picturesque appearance of its banks. A walk from Twickenham to Hampton, by the usual public road, would not exceed three miles, whereas by water the distance is seven or eight.

The portion of the river included between Hampton and Kingston is known to the lovers of poetry as the scene of one of Pope's finest poems. A lady of distinguished beauty, Mrs. Arabella Fermor, while being rowed along the river with a party of friends, had a lock of her hair stealthily cut off by a gallant who formed one of the party: the incident was trifling, and gave cause for offence to the family of the lady, but on this trifle Pope founded a poem of exquisite beauty.

Kingston, the next town to Hampton, but on the opposite side of the river, is one of the most ancient in this part of England. In the market-place of Kingston the Saxon monarchs of England used to be crowned, either on a raised platform in the open air, or in the church. Edward the elder, Athelstan, Edmund, Edred, Edwy, Edward the Martyr, and Ethelred, were thus crowned, between the years 900 and 978. Kingston was the scene of a romantic tale told by Hume the historian, relating to King Edwy and his Queen Elgiva, in which a knot of ambitious nobles effected the murder of the queen, after brutal violence, in revenge for a slight put upon them by the king and queen. Remote as was the period of these events, there seems to be proof that Kingston is the site of a town many centuries older, or at least of an encampment; for, on digging the foundation for a new bridge, a few years ago, several Roman military weapons, consisting of spear-heads and swords, of beautiful workmanship and in a good state of preservation, were discovered. About the same time also several human skeletons, with Roman ornaments lying near them, were discovered in a neighbouring field on the Surrey side of the river. In a former article we alluded to the conjectures which have been made respecting the probable passage of Cæsar over the river near Weybridge; but these discoveries have given rise to the opinion, that Cæsar, on quitting his encampment on Wimbledon Common, crossed the Thames at Kingston; and that the skeletons were those of some of his troops that fell in endeavouring to force the passage of the river against the opposing Britons, whose slain are supposed to be interred in a tumulus (not yet opened) in a field called the Barrow field, on the Middlesex side of the river, and about half a mile from the spot where the weapons were found.

Over the Thames at Kingston was formerly one of the most ancient bridges on the river, it being mentioned in a record in the eighth year of Henry the Third. During the intestine commotions which from time to time disturbed the country, the bridge was frequently destroyed, to cut off the communication between Surrey and Middlesex. The bridge existing until about twelve or fourteen years ago was of wood, about five hundred

feet in length, and endowed with lands to keep it in repair. In the year 1828, however, it was replaced by an elegant structure of Portland stone, consisting of five spacious elliptical arches, and surmounted by a handsome cornice and balustrade, with galleries projecting over the piers: the expense being 40,000*l*. The town of Kingston carries on a considerable amount of trade; and since the opening of the London and South Western Railway, which passes close by Kingston, and which has a station at that place, the bustle of the town has considerably increased, and the route to many towns on the Middlesex side, which used to be followed on the northern side of the river, is now made through Kingston and over Kingston Bridge. With regard to the municipal affairs of the town, it is probable that the recent act has made some changes; but under the old system, the election of the members of the corporation was distinguished by a singular custom, said to be sanctioned by the ancient charter of the town. A match at football took place, in which the lower orders engaged with so much zeal and activity, that the inhabitants of the principal streets found it expedient to barricade all the windows in front of their houses.

Between Kingston and Twickenham the Thames presents a large number of swans, the conservancy of which is a curious part of the privileges of the Corporation of London. The Lord Mayor, either in person or by deputy, goes up the river annually, accompanied by the officers of the Vintners' and Dyers' Companies, to mark the young swans. By an act of parliament passed in the reign of Edward the Fourth, it was declared a felony, punishable with imprisonment for a year and a day, and a fine at the king's pleasure, to steal the swans' eggs. Coke mentions a curious law which was once in operation, for the punishment of any one who stole a lawfully marked swan from any open or common river. The swan was taken and hung by the beak from the roof of a house, so that the feet just touched the ground. Wheat was then poured over the head of the swan, until there was a pyramid of it from the floor sufficient to cover and hide the bird completely: this quantity of wheat was the fine paid by the culprit to the owner of the swan. The swans on the Thames have been alluded to by more than one of our poets, among whom is Spenser, who says:—

> See the fair Swans on Thamis' lovely side,
> The which do trim their pennons silver bright;
> In shining ranks they down the waters glide;
> Oft have mine eyes devoured the gallant sight.

The part of the Thames at which we have now arrived is particularly rich in associations connected with our great writers and wits. Thomson, Pope, Horace Walpole, and many others whose names are known to every one, either lived or died in this immediate vicinity. Teddington, Twickenham, and Richmond, with the intervening country, form the locality to which we allude. Teddington is a small, quiet place, distinguished in a commercial sense as the spot to which the tides of the river ascend, but no higher. The little church at Teddington, with the surrounding villas and their ornamental gardens, presents a very pleasing scene as viewed from the river. Paul Whitehead, the poet laureate, and Dr. Hales, a man of scientific attainments, lie buried in the church. The Earl of Leicester, a favourite of Queen Elizabeth, and William Penn, the quaker, were residents at Teddington.

A little below Teddington we come to Strawberry Hill, a mansion celebrated as the residence of Horace Walpole, where he was visited by most of the poets and wits of the age. The site was originally occupied by a small house let out as a lodging-house. This passed into the hands of Colley Cibber, a dramatic writer, who penned some of his productions there. The third possessor was a Mr. Chenevix, from whom it passed into the hands of Horace Walpole, about a century ago. He amused himself for many years in enlarging and beautifying the house and the grounds attached to it, and storing them with pictures, busts, and antiques of every description. In the architecture of the building, he borrowed specimens from the choir of the Cathedral Church at Rouen, from the tomb of Archbishop Wareham at Canterbury, and from St. George's Chapel at Windsor. It has been well observed notwithstanding, that however elegant the internal decorations were, the place may be considered as a picture of the mind of him who formed it, in which there was nothing *great*. He was the son of a prime minister, Sir Robert Walpole, whose power was of long duration; his rank as Earl of Orford was among the higher orders of nobility; and his property was large. He was thence early inured to flattery, with all the indulgences of his situation, and he continued naturally enough to expect the enjoyment of them to the close of a very long life. His pursuits, though not without taste and elegance, had little of masculine energy or mental capaciousness. At Strawberry Hill, Walpole established a printing-press, where his own works, and occasionally a *jeu d'esprit* of a friend, were printed. The Strawberry-Hill editions, as they are called, which are now become scarce, command a very high price among the more curious collectors of printed works. The most distinguished of the works is the Lives of the Painters and Engravers, which Walpole formed from the papers of Vertue, aided by his own collections. Strawberry Hill was possessed a few years ago by the Honourable Mrs. Damer, to whom it was bequeathed by Horace Walpole.

The village of Twickenham, at which we next arrive, is more celebrated, perhaps, for having been the residence of Pope, than for all other circumstances put together. Who has not heard of "Pope's Villa at Twickenham"? The name of Pope's Villa is even now given to a building which is no more Pope's Villa than the Queen's Palace is the old Buckingham House. Pope built a villa which, after his death, passed into the hands of Sir William Stanhope; the third possessor was the Right Honourable Welbore Ellis, afterwards Lord Mendip; and the fourth was Lady Howe, who has replaced the old villa by one of more modern construction; so that the real villa of Pope does not now exist. Much indignation has been expressed by many writers at an act which tended so much to break up the local associations of the great poet, but Mr. Mackay remarks, that however much this lady may have destroyed of the poet's dwelling, she has left the *Grotto* for the reverence of posterity, by far the most valuable part of it, containing the rooms in which he was accustomed to study, and in which he entertained the poets and wits of his day.

The grotto here alluded to was made by Pope, about the year 1715, as a subterraneous passage to a garden on the other side of the road: and in a letter which he wrote to his friend Edward Blount, he gives an animated description of the manner in which he had planned and laid out this favourite retreat.

A little cell, on the left hand side of the grotto, used to be Pope's study, on almost every stone of which visitors have scratched their names. A cell on the right hand side was formerly occupied as a kitchen.

"Pope's willow" is almost as well known to fame as "Pope's Villa." The poet planted a weeping willow in his grounds, which was considered one of the finest specimens of that tree ever seen, and was protected and propped in its old age with great care by those who succeeded in the possession of the estate. Some stanzas were addressed to this tree by an admirer of Pope, of which we will here give two:—

> Weep, verdant willow, ever weep,
> And spread thy pendant branches round:—
> Oh! may no gaudy flow'ret creep
> Along the consecrated ground;
> Thou art the Muses' favourite tree—
> They loved the bard who planted thee.

But all the Muses' tender care
Cannot prolong the fatal date:
Rude Time will strip thy branches bare,
And thou must feel the stroke of Fate:—
E'en thou, the Muses' favourite tree,
Must fall, like him who planted thee.

But "rude time" was not the only one who stripped the branches bare. The tree was almost *picked to death*, and then rooted up, a fate which has made many admirers of the poet very indignant against the proprietress of the grounds. But Mr. Mackay has, we think, stated the matter in a fair and just form, in the following remarks:—

There was formerly a willow-tree overhanging the river, which has also been removed; but with the destruction of this Lady Howe is not chargeable. So numerous were the visitors, and such pilferers were they, where a relic was concerned, that the tree was soon stripped both of leaves and branches. Slips of it were sent for from all parts of the world; and the owner was at last so pestered, that she was obliged, in self-defence, to uproot the tree, and make a relic of it, which would not entail so much trouble upon its possessor. Nothing but the root now remains, which is safely housed in the grotto; forming a substance too hard to be taken away in little bits by the pen-knife of the visitor, and too bulky to be carried off entire. Visitors used formerly to play the same tricks with the very stones and spars of the grotto; but, upon inquiry of our guide, we were informed that such was not the case now to any great extent, although occasionally a person is detected trying to notch off a flint or a shell, and a lady holding an open reticule ready to receive it.

The same gentleman, who visited the grotto at Twickenham a year or two ago, said that he apprehended the grotto would exist but a little time longer; as the villa was advertised for sale, and there were rumours of an intention to pull down the grotto. In allusion to the manner in which local memorials of our poets and philosophers are gradually destroyed, he said that it is in vain to hope, unless Pope's Villa falls into the hands of an enlightened purchaser, that the grotto will be preserved, or that even a stone will be erected to mark the spot, and to say "HERE POPE SUNG."

Of the Thames in the vicinity of Twickenham, it has been remarked by writers of all grades, poets, painters, and topographers, that it presents scenes of extraordinary beauty. The river rolls on through meadows of the richest verdure, while its banks are adorned with the contrasted beauty of the villa and the cottage, in a long succession of edifices, which mark the taste and the opulence of those who possess them. In the middle of the river is a little island called Twickenham Ait, or more commonly "The Eel-pie Island," upon which there was until very lately a tavern famous for the mode adopted there in dressing the eels caught in the river.

HOPE! of all ills that men endure,
The only cheap and universal cure!
Thou captive's freedom, and thou sick man's health!
Thou loser's victory, and thou beggar's wealth!
Thou manna, which from heaven we eat,
To every taste a several meat!
Thou strong retreat! thou sure-entail'd estate,
Which nought has power to alienate!
Thou pleasant, honest flatterer! for none
Flatter unhappy men, but thou alone!—COWLEY.

IN the Church of St. Peter at Cologne, the altar-piece is a large and valuable picture by Rubens, representing the martyrdom of the Apostle. This picture having been carried away by the French in 1805, to the great regret of the inhabitants, a painter of that city undertook to make a copy of it from recollection; and succeeded in such a manner, that the most delicate tints of the original are preserved with the most minute accuracy. The original painting has now been restored, but the copy is preserved with it; and even when they are rigidly compared, it is scarcely possible to distinguish the one from the other.

ON THE

METHODS USED BY THE ANCIENT EGYPTIANS FOR TRANSPORTING AND ERECTING LARGE MASSES OF STONE.

THE character of the old Egyptian architecture is massy grandeur, adapted to giants rather than men. Hence it becomes a curious matter of speculation to refer to the means which we may suppose the ancient denizens of the Valley of the Nile to have employed, for *removing* from the quarries to their due locality the enormous stones which are scattered over the face of the country, and then for *erecting* them in a state of apparently imperishable firmness.

The extent of the quarries at Selseleh, in Upper Egypt, which we have noticed in a former paper, is very great: they are, in fact, of such an extent that masses of any dimensions might be hewn from them. In one of the quarries at El-Maasara the mode of transporting the stone is represented. It is placed on a sledge drawn by oxen, and is supposed to be on its way to the inclined plane that led to the river, vestiges of which may still be seen a little to the south of the modern village.

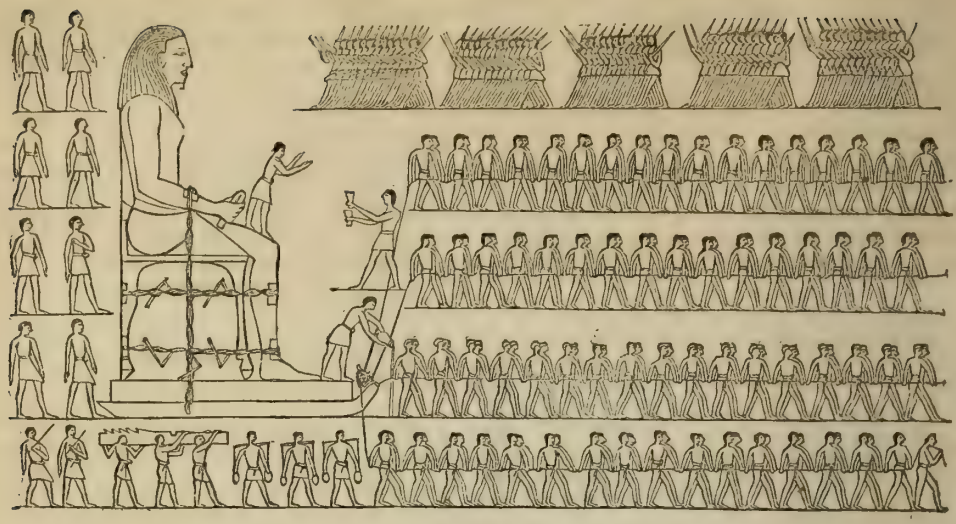
Sometimes, and particularly when the blocks were large and ponderous, men were employed to drag them, and those who were condemned to hard labour in the quarries as a punishment appear to have been required to assist in moving a certain number of stones, according to the extent of their offences, ere they were liberated. This seems to be confirmed by the following inscription, found in one of the quarries of Gertassy, in Nubia: "I have dragged 110 stones for the building of Isis at Philæ." In order to keep an account of their progress, they frequently cut the initials of their names, or some private mark, with the number, on the rock whence the stone was taken, as soon as it was removed, many of which signs occur at the quarries of Fateereh.

The blocks were taken from the quarry on sledges, and in a grotto behind E'Dayr, a Christian village between Antinoë and El Bersheh, was first discovered by Captains Irby and Mangles the representation of a colossus, which a number of men are employed in dragging with ropes. This colossus was probably not hewn in the hill of El Bersheh, but it is exceedingly interesting, from its being of a very early age, and one of the very few paintings which throw any light on the method employed by the Egyptians for moving weights, for it is singular that we find no illustration of the mechanical means of a people who have left so many unquestionable proofs of skill or capacity in these matters.

An engraving of this picture, which represents the transportation of a colossus, accompanies the present article. In the original picture 172 men, in four rows of 43 each, pull the ropes attached to the front of the sledge. The number may be indefinite, and it is probable that more were really employed than are indicated in the painting. In order to obtain a more convenient size for engraving we have diminished the number of men in each row before and behind: otherwise we have given a fair representation of the Egyptian artist's work. A liquid, probably grease, is poured from a vase, by a person standing on the pedestal of the statue, in order to facilitate its progress as it slides over the ground, which was probably covered with a bed of planks, though they are not indicated in the painting.

Some of the persons employed in this laborious duty appear to be Egyptians: the others are foreign slaves, who are clad in the costume of their country: behind are four rows of men, who, though only twelve in number in the original, and diminished by us to *eight*, may be intended to represent the sets which relieved the others when fatigued.

Below are persons carrying vases of liquid, perhaps water, for the use of the workmen, and others with implements connected with the transport of the statue, followed by taskmasters, with their wands of office. On



TRANSPORTATION OF A COLOSSUS BY THE ANCIENT EGYPTIANS.

the knee of the figure stands a man who claps his hands to the measured cadence of a song, to mark the time, and ensure simultaneous draught, for it is evident that in order that the whole power of the drawers might be applied at the same instant, a signal of this kind was necessary.

The height of the statue appears to have been about twenty-four feet, including the pedestal. It was of limestone, and was bound to the sledge by double ropes, which were tightened by means of long pegs inserted between them, and twisted round until completely braced, and to prevent injury from the friction of the ropes upon the stone, a compress of leather or other substance was introduced at the part where they touched the statue. In the present instance the ropes attached for moving the mass are confined to one place at the front of the statue, but in blocks of very great length certain pieces of stone were left, projecting from the sides like the trunnions of a cannon, to which several ropes were attached, each pulled by its own set of men.

We are given to understand that small blocks of stone were sent from the quarries by water to their different places of destination, either in boats or on rafts; but that those of very large dimensions were dragged by men, overland, in the manner already represented; and the immense weight of some of them shows that the Egyptians were well acquainted with mechanical powers, and the mode of applying a locomotive force with the most wonderful success. Their skill, however, was not confined to the mere moving of immense weights: their wonderful knowledge of mechanism is shown in the erection of obelisks, and in the position of large stones, raised to a considerable height, and adjusted with the utmost precision; sometimes, too, in situations where the space will not admit the introduction of the inclined plane.

Pliny, who lived about a century after the birth of Christ, describes a method of transporting obelisks from the quarries down the river, by lashing two flat-bottomed boats together side by side, which were admitted into a trench, cut from the Nile to the place where the stone lay, laden with a quantity of ballast exactly equal to the weight of the obelisk; which, so soon as they had been introduced beneath the transverse block, was all taken out; and the boats rising, as they were lightened, bore away the obelisk in lieu of their previous burthen.

However imperfect may be our knowledge of the means which the ancient Egyptians used for *transporting* the material of their buildings, we know perhaps still less of their methods of *erecting* them. Tradition had preserved to the time of Herodotus, who lived in the fifth century B.C., an account of the simple contrivance used in building the Pyramids; which contrivance may have been also followed in the construction of other edifices. The pyramid was built in receding stages, the area of each stage being less than that below it. When the first level was finished, the stones intended for the second course were lifted upon it by means of cranes, or levers, and then removed to the proper distance from the edge of the platform. In the same way, the stones intended for the third level were raised upon the first step, and from that transferred to the next above it; and so on to the top of the pyramid. The peculiar advantage of this method consists in the small height to which each stone was to be raised at once.

It seems probable, in the case of other Egyptian buildings, that banks of earth in the form of inclined planes, or some such simple contrivances, were employed, rather than more complicated mechanical powers, for raising and adjusting great weights. It was probably easier for them to raise their stones by a frame-work and earth with receding stages, than to trust the prodigious masses of their architraves and cornices to any mechanical power which they could command. It was often the practice in Egyptian buildings to fasten the stones together by clamps of various kinds, as was once observed to have been done in the buildings of Memphis.

No insight, as has been already observed, is afforded us into the secrets of the mechanical knowledge of the old inhabitants of the Nile, from the sculptures or the paintings of the tombs, though so many and such varied subjects are there introduced. Our information connected with this point, is confined to the use of levers, and a sort of crane, as mentioned by Herodotus; but it is, however, certain that the ancients did raise enormous masses, apparently with a facility unknown to the moderns. This is proved by the ingenious experiments of Archimedes, who lived in the third century before the Christian era. Some suppose that it was this philosopher who raised the site of the towns and villages of Egypt, and began those mounds of earth by means of which communication is kept up from town to town during the inundations of the Nile.

We have nothing further to add to the foregoing remarks, than the presumption, that the main part of the secret of the mechanical means of the old Egyptians consisted in their almost unlimited command of human labour. By such means as this, most of the weighty works of building in former ages were probably effected; works which still continue, as they have done throughout so many generations, to surprise and delight the traveller in these latter times.

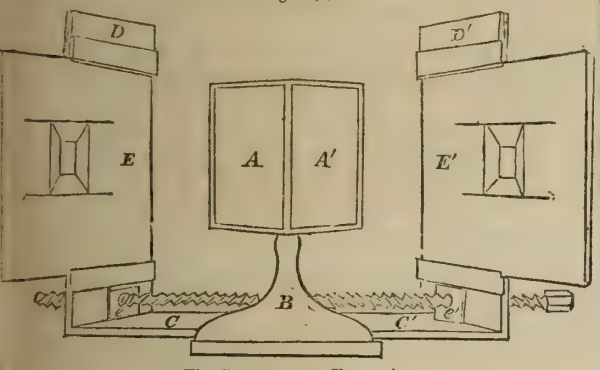
OPTICAL ILLUSIONS.

VIII.

On Binocular Vision. (*Continued.*)

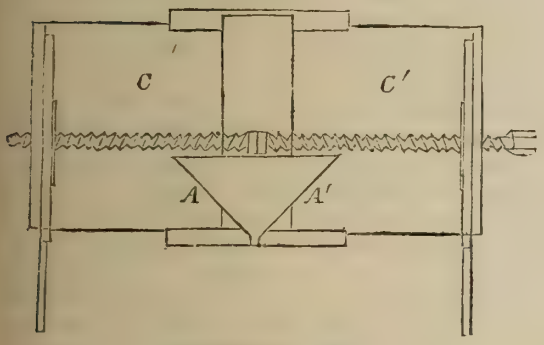
In our last paper on this subject we explained Professor Wheatstone's views of the nature of binocular vision, and the experiments by which he illustrated the truth of his opinions. We also alluded to an instrument termed the *stereoscope*, which that gentleman had constructed for the better elucidation of this curious inquiry. The construction and use of this instrument we shall now explain.

Fig. 4 (*a*).



The Stereoscope. Front view.

Fig. 4 (*b*).



The Stereoscope. Plan.

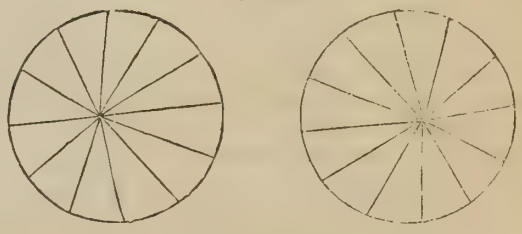
Fig. 4 (*a*) represents the front view, and fig. 4 (*b*) the plan of the instrument, the same letters of reference being used in both. A A′ are two plane mirrors, about four inches square, inserted in frames, and so adjusted that their backs form an angle of 90° with each other. These mirrors are fixed by their common edge against an upright, B, or else against the middle line of a vertical board, cut away in such a manner as to allow the eyes to be placed before the two mirrors. C C′ are two sliding boards, to which are attached the upright boards D D′, which may thus be removed to different distances from the mirrors. As it is necessary in most of the experiments that each upright board shall be at the same distance from the mirror which is opposite to it, this adjustment is effected by a right and left-handed wooden screw. The two ends of this compound screw pass through the nuts *e é*, which are fixed to the lower parts of the upright boards D D′, so that by turning the screw pin one way the two boards will approach, and by turning it the other they will recede from each other, one always preserving the same distance as the other from the middle line. E E′ are panels to which the pictures are fixed, in such a manner that their corresponding horizontal lines shall be in the same level: these panels are capable of sliding backwards and forwards in grooves on the upright boards D D′.

This being the nature of the apparatus, the mode in which Mr. Wheatstone directs it to be used is as follows: The observer must place his eyes as near as possible to the mirrors, the right eye before the right-hand mirror, and the left eye before the left-hand mirror, and he must move the sliding panels E E′ to or from him, until the two reflected images coincide at the intersection of the optic axes, and form an image of the same apparent magnitude as each of the component pictures. The pictures will coincide when the sliding panels are in a variety of different positions, and consequently when viewed under different inclinations of the optic axes, but there is only one position where the phenomena can be properly observed, and this is said by Mr. Wheatstone to be that which takes place when the optic axes converge about six or eight inches before the eyes, that is, when both eyes are directed to a point six or eight inches distant.

Now the mode in which this machine produces the required effect may be thus explained. In the sliding panel on the right is fixed a drawing representing the appearance which an object has to the right eye, and the reflecting surface of the mirror is placed at such an angle that the reflected figure appears to come from the focus or point to which both eyes are directed. By substituting the word "left" for "right," the same remark applies to the other half of the machine, and the effect is as if *both* drawings were placed at the point of convergence towards which both eyes are directed. The effect then is found to be, that the two drawings combined, one seen by one eye and the other by the other, give an image almost exactly resembling the solid object itself, with an appearance of relief, of solidity, of length, depth, and width, such as no single drawing, however, skilfully executed, could give. The two eyes, when looking at a near object, do not perceive it under exactly the same circumstances, or of the same form, and our notions of that object are derived from the combination of these two separate appearances: so in the *stereoscope*, (a term derived from two Greek words, which signify to "see a solid,") the two pictures presented by reflection to the two eyes, are not exactly alike, but by the proper focalization the combined effect of both is that of a solid body. The difference between the appearance of an object to the two eyes, or between the two drawings made in conformity thereto, is just this, that they are two different projections of the same object seen from two points of sight, the distance between which is equal to the interval between the pupils of the eyes of the observer, which interval is generally about two inches and a half.

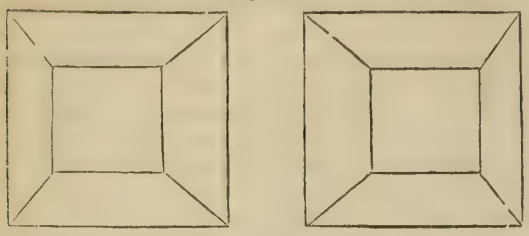
The following are three of the arrangements which Mr. Wheatstone employed. In fig. 5 (*a*) are two circles, with lines drawn from the circumference to a point near, but not quite, at the centre: in one the point is nearest to the right-hand side, while in the other it is nearest to the left, and when both are placed in the stereoscope, one in the right-hand panel and one in the left, the combined image of both presents the appearance of a cone, with its axis perpendicular to the drawing, and its vertex towards the observer. The two drawings are, in fact, copies of the appearance which a small cone would present to the two eyes, with the apex towards the observer, and the effect of the instrument is to re-combine them, and produce the *relief* which the images of objects seen with two eyes are

Fig. 5 (*a*).



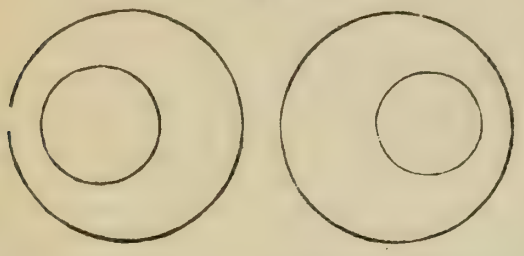
accustomed to present. In like manner the two drawings of fig. 5 (*b*) present in combination the appearance of

Fig. 5 (*b*).



the frustrum of a square pyramid, with its axis perpendicular to the picture, and its base farthest from the eye, and the two drawings in fig. 5 (*c*) give the appearance of two circles at different distances from the eyes, their centres in the same perpendicular, forming the outline of the frustrum of a cone.

Fig. 5 (*c*).



Mr. Wheatstone states, and a little consideration must show the necessity of the circumstance, that a remarkable inversion of the effect is produced when the drawing originally intended to be seen by the right eye is placed at the left hand side of the stereoscope, and that designed to be seen by the left eye is placed on its right hand side. A figure of three dimensions, as bold in relief as before, is perceived, but it has a different form from that which is seen when the drawings are in their proper places: it is in fact a converse figure. Those points which are nearest the observer in the proper figure are the most remote from him in the converse figure, and *vice versâ*, so that the figure is, as it were, inverted; but it is not an exact inversion, for the near parts of the converse figure appear smaller, and the remote parts larger, than the same parts before the inversion. Hence the drawings which, properly placed, occasion a cube to be perceived, when changed in the manner described, represent the frustrum of a square pyramid, with its base remote from the eye. In many instances of this kind, when the regular figure presents an exterior or convex appearance, the converse will present an interior or a concave.

As a means of proving whether the binocular effects were produced in the manner supposed, Mr. Wheatstone procured several pairs of little outline or skeleton solids, that is, cubes, octohedrons, &c., formed of pieces of wire; and placed each pair successively on stands before the two mirrors. The effect produced may be illustrated by that of a pair of cubes. When they were so placed that the pictures which their reflected images projected on the two retinæ were precisely the same as those which would have been projected by a cube, placed at the point of convergence of the optic axes, a cube in relief appeared before the eyes; when they were so placed that their reflected images projected exactly similar pictures on the two retinæ, all effect of relief was destroyed, and the compound appearance was that of an outline representation on a plane surface; lastly, when the cubes were so placed that the reflected image of one projected on the left retina the same picture as in the first case was projected on the right retina, and *vice versâ*, the converse figure in relief appeared.

In these experiments outline figures or models, uncoloured, were employed, in order to simplify the results; for had either shading or colouring been introduced, it might be supposed that the effect was wholly or partly due to these circumstances; whereas by leaving them out of consideration, Mr. Wheatstone distinctly saw that the entire effect of relief is owing to the simultaneous perception of the two monocular projections, one on each retina. He thinks that, "if it be required to obtain the most faithful resemblances of real objects, shadowing and colouring may properly be employed to heighten the effects. Careful attention would enable an artist to draw and paint the two component pictures, so as to present to the mind of the observer, in the resultant perception, perfect identity with the object represented. Flowers, crystals, busts, vases, instruments of various kinds, &c., might thus be represented so as not to be distinguished by sight from the real objects themselves.

There is a singular confusion often presented by the geometrical figures contained in books of geometry. Whoever has paid any attention to this subject, is aware that figures of triangles, squares, circles, spheres, polygons, polyhedrons, &c., occur at every few lines in a geometrical treatise; and that such of these as pertain to solid geometry are intended to represent figures of which some of the angles, edges, or sides, are farther from the eye than others. Now it very frequently happens, that the parts which are supposed to be most distant, suddenly start up as it were into prominence, and appear nearest to the eye; and were it not that the engravers are accustomed to represent by *dotted* lines the parts most remote from the eye, this confusion would arise yet more frequently. Professor Neckar of Geneva notices this circumstance, and endeavoured to explain it by deferring it to an involuntary change in the adjustment of the eye for obtaining distinct vision. But Mr. Wheatstone attributes it to the uncertainty of the evidence presented to the eye by a mere picture, especially when entirely unaided by shadow or colour.

In one more article we shall conclude our notice of this very interesting series of experiments.

TURN on the prudent ant thy heedless eyes,
Observe her labours, sluggard! and be wise.
No stern command, no monitory voice,
Prescribes her duties or directs her choice;
Yet timely provident she hastes away,
To snatch the blessings of a plenteous day;
When fruitful Summer loads the teeming plain,
She crops the harvest, and she stores the grain.
How long shall sloth usurp thy useless hours,
Unnerve thy vigour, and enchain thy powers
While artful shades thy downy couch enclose,
And soft solicitation courts repose,
Amidst the drowsy charms of dull delight,
Year chases year with unremitted flight,
Till want now following, fraudulent and slow,
Shall spring to seize thee like an ambushed foe.—

DR. JOHNSON.

I HAVE thought the perusal of fine authors is like traversing the different regions of the earth: some glow with a pleasant and refreshing warmth, whilst others kindle with a fierce and fiery heat; in one we meet with scenes of elegance and art, where all is regular, and a thousand beautiful objects spread their colours to the eye, and regale the senses; in another, we behold nature in an unadorned majestic simplicity, scouring the plain with a tempest, sitting upon a rock, or walking upon the wings of the wind. Here we meet with a Sterne, who fans us with the softest delicacies and there a Rousseau, who hurries us along in whirlwind and tempest. Hence that delightful succession of emotions which is felt in the bosom of sensibility. We feel the empire of genius, we imbibe the impression, and the mind resembles an enchanted mansion, which, at the touch of some superior hand, at one time brightens into beauty, and at another darkens into horror.—ROBERT HALL.

ON CHESS. XXI.

Origin of the Powers of the Pieces.

In our last article we noticed the attempt made to connect chess with two very ancient games. It is probable that a patient investigation of the subject would lead to the conclusion, that from the elements of those two games draughts was invented, and that the game represented on the Egyptian monuments (see *Sat. Mag.* vol. xviii. p. 20) was the offspring of Merelles and Petreia.

The moves of the pieces and pawns in modern chess appear so complicated, that at first view it would be thought hopeless to look to such a game as draughts for their origin. But an attentive analysis of the moves at chess reduces them to a very simple character, and it is not improbable that the moves of the pieces in a simpler and more ancient game, were similar in effect to the shortest move of the Rook together with the shortest move of the Bishop, and that these may now be taken as the type of the moves of all the pieces in the game of chess.

The Knight's move may be immediately cited as an objection to this supposition. If we bear in mind only the shortest moves of the rook and bishop, and then examine the mode by which the squares of the chess board are attached one to another, we shall see that they are connected either by an angle, which forms a path from square to square, by the contact of the diagonals,—or by a side, which forms a path from square to square between two parallels. The first of these movements belongs to the bishop; the second to the rook. Now the one of these movements seems to have been combined with the other, in order to give a move to the knight, and the combination was of the simplest kind, viz., a compound of the shortest path of the bishop with the shortest path of the rook, or *vice versâ:* hence the path of the knight is always of the same dimensions. Geometrically, the knight's leap is always the hypotenuse of a right-angle triangle, of which the base equals twice the perpendicular, the latter being equal to the side of one square*.

From the limited information that we have been able to collect on the origin of the moves at chess, we are led to suppose that, at an early period in the history of the game, the moves of some of the pieces were limited to a single square at a time; that by a subsequent privilege each player was allowed to make several moves at once before his antagonist moved; and that, in the present state of the game, whenever a move is made by certain pieces of more than one square at a time, it is to be deemed as the result of such privilege now lost and forgotten.

But this privilege is to a certain extent preserved in the Hindostanee game, at the beginning of which four or eight moves, as may be agreed upon, are played upon both sides. In this game also the two royal pawns and those of the two rooks are allowed to move two squares each at first, so long as their pieces remain at their squares. The other pawns move only one square at a time. Some of the peculiarities of the Hindostanee game are still preserved at Ströbeck. Mr. Lewis says, "The pieces being placed as usual, each party is obliged to play his king's rook's pawn, queen's rook's pawn, and queen's pawn, two squares, and the queen to her third square." After this the other pawns can move but one square.

We are not aware of the precise powers of the pieces at the time of the introduction of chess into Europe; but we have abundant evidence to prove that they were very different to those exhibited on the modern chess board. In the thirteenth and fourteenth centuries, the powers of the rook, the knight, and the pawn, were the same as at present; but many remarkable peculiarities belonged to the other pieces, which we will state at some length.

1. The Shah, Rey, or King. The Eastern name given to this piece was *Shah*, equivalent to our European word *Rey* or *King*, and it is from this piece that the game derives its name. The original movement of the rey appears to have been extremely confined, he being incapacitated from moving, except when absolutely forced to do so by an adverse check: this may in some measure be accounted for by reflecting that, as the value of the king at this game is beyond calculation (since the instant he is mated the contest is decided), they were therefore the less willing to risk his person in the field. About the commencement of the thirteenth century the rey was allowed the shortest move of the rook, and the reason why he was not allowed to move nor to take angularly seems to be found in the taste that predominated in the twelfth and thirteenth centuries of moralizing almost every subject, viz., that the king ought to take everything justly and not in an oblique, *i. e.* indirect, manner. This restriction, however, was soon removed, and the rey had the power of moving and taking as well angularly as directly; but his range of action never extended beyond one square.

2. The Ferce or Queen. The name of this piece in Persian is *Pherz*, which signifies a wise and learned man, capable of giving counsel to the Shah. We have already stated that, on the introduction of chess into Europe, the word Ferce was by an easy mutation corrupted into Vierge, a virgin, and afterwards into Reyne, a queen, though the old term *Ferce* still continued to be used, and the piece retained its originally limited movements of one square at a time, and that angularly, and never directly. The substitution of a female at this game, instead of the vizier of the Orientals, has been thus ingeniously explained: "Men are soon persuaded that the picture of human life, under which they represented chess, would be very imperfect without a woman; that sex plays too important a part not to have a place in the game; and hence they changed the minister into a queen, the similarity of the words Fierge and Vierge facilitating the change." The gallantry natural to an age of chivalry and politeness, subsequently converted the Ferce from the least considerable of the chess pieces to the most powerful in the game; but this gallantry introduced that strange anomaly into the game which destroyed its military character: a pawn or foot soldier having pierced through the enemy's battalions, was rewarded for his valour by promotion to the rank of vizier, minister of state, or general; but it is absurd to make the pawn change his sex, and from a foot soldier become a queen. This point is quite sufficient to prove that the second piece at chess has been improperly named Virgin, or Queen. The ancient writers on the game, to get rid of this anomaly, endeavour to insinuate that such pawns as are made ferces, were always females; but they explain this so very awkwardly, that the point is left precisely where it is taken up. Thus, in an early MS. quoted by Mr. Lake Allen, the following lines occur in French:

Les damoiseles me vnt requis.	The damsels have requested me,
Ke lour guy ne seyt oblis.	That their game be not forgotten.
E pur lamour qe a eus ay.	And for the esteem that I bear to them
Lour guy en ceste esc't mettray.	I will here describe their game.
Seygnoures li pou' ces mest auys.	My lords the pawns, as I think,
Signefient meschines de pris.	Signifiy ladies of value;
Kar reynes faimes de pounes.	For pawns which become queens,
E du'kes fierces les appellomes.	Them we call Fierces;
E pur ceo damoyseles signefi'nt	And because they signifiy damsels,
Non pas garconnes cu' les vnes di'nt.	They are not boys as some say,
Kar si li pou' males estoyt.	For if the pawns were males,
James femeles ne deuedroyt.	They would never become females.

By means of such reasoning as this the author concludes,

E pur ceo ke ceste guy est ou pou'.	And because this is a game with Pawns,
Le guy de damoiseles appellom.	The game of Damsels we call it.

* This ingenious theory of the origin of the knight's move is due to Teodoro Ciccolini, Marchese di Guardagrele, whose work, "Del Cavallo degli Scacchi," appeared at Paris a few years ago

3. The Alfyn or Bishop. We have already spoken of the mutations to which the phil, or elephant (the Eastern name of this piece), has been subject in Europe. It was evidently as much at variance with the character of the game for us to name this piece the Bishop, as for the French to call it the Fool.

In the thirteenth century the alfyn had the diagonal move of our bishop, restricted in its range of action to the third square from which it stood. So that, in order to capture an adverse piece, it was necessary that the alfyn should be distant from it one clear square: thus, suppose a white alfyn to be on the fourth square of his rey, he could then capture any pawn or piece standing, 1, on the adverse rey's chivalier's *third* square; 2, reyne's alfyn's *third* square; 3, his own rey's chivalier's *second* square; and 4, his reyne's alfyn's *second* square. But as he was always incapacitated from moving to a greater or less number of squares, no piece could be either captured or considered *en prise*, if situated close to it, or removed at a greater distance than the *third* square. As a compensation for so confined an action on the board, the alfyn was allowed the vaulting power of the chivalier. Thus, if a white alfyn be on his rey's fourth square, a black or white rok on the adverse reyne's fourth square, and a black poun on his reyne's alfyn's third square, the white alfyn could capture the black poun, notwithstanding the interposition of the rok. The subsequent extension of the range of action of the alfyn deprived him, in the course of time, of this vaulting motion.

4. The Asp or Horseman, Chivalier or Knight. 5. The Ruch, Ruk, Roc, or Rook, that is, the camel or dromedary. 6. The Beidak Poun, Pawn, or Foot-soldier. The powers of moving and other prerogatives of these pieces have not varied since the introduction of the game into Europe. We need only remark, that to represent the swiftest piece on the board (as the roc was at one time), by a castle, is another strange anomaly in the game.

By referring to Caxton's *Treatise on Chess*, published in 1474, we find that the powers of some of the pieces had, at that time, become remarkably changed. The king, for his first move, was allowed to leap over the pawns, and pass to any one of the five squares, viz., king's knight's third, king's bishop's third, king's third, queen's third, and queen's bishop's third. Two out of these five moves are peculiar to the knight, and the other three are not recognised in modern chess. These two knight's moves were not permitted to the queen, because "it is not fitting ne convenable thing for a woman to go to battle, for the fragility and feebleness of her." The queen's first move could be made to her third square, to her knight's third, or to the king's bishop's third. After the king and queen had each been moved once, their moves were restricted to one square at a time: the former having the shortest move of the rook, and the latter the shortest move of the bishop

The bishop had a prescribed move of two diagonal squares at once, as before noticed; one effect of this move being, as Caxton says, "that the alphin goeth in six draughts all the chequer round about, and that he cometh again into his own place."

The limited power of the king is ingenicusly explained by reference to the power of the rook: "Forasmuch as the king holdeth the dignity above all other, therefore it appertaineth not that he absent himself long, ne withdraw him far by space of time from the master seat of his kingdom." The restricted power of the queen in this early state of the game is explained on the ground that "the king and queen be conjoined together by marriage, and be one thing, as one flesh and blood." It will be remembered that, at this time, the rooks were the most powerful pieces, but—

Forasmuch as they be vicars, lieutenants, or commissioners of the king, their authority is of none effect before they issue out; for as long as they be within the palace of the king, so long may they not use ne execute their commission. But anon, as they issue they may use their authority. And ye shall understand that their authority is great, for they represent the person of the king, and therefore, when the tablier is wide, they may run all the tablier. In likewise as they go through the kingdom, and they may go as well white as black, as well on the right side and left, as forwards as backwards, and as far may they run as they find the tablier void, whether it be of his adversarie's as of his own fellowship. And when the rook is in the middle of the tablier, he may go which way he will, into four right lines on every side; and it is to wit that *he may in no wise go cornerwise*, but alway right forth. Wherefore all the subjects of the king, as well good as evil, ought to know by their moving that the authority of the vicars and commissioners ought to be very true, righteous, and just.

The powers of the knight and pawn seem to have been the same as in modern chess. When a pawn, however, arrived at the adversary's royal line, its promotion was modified by the singular powers of the queen. If the pawn reached the royal line on a black square, it then had the power of a queen placed on a black square, viz., to move on the black squares diagonally and one square at a time. If the pawn became a queen on a white square, then it could move only on the white diagonals one square at a time.

Our information does not allow us to trace the progress of the game from the time of Caxton, so as to shew the gradual steps by which the pieces became invested with their present powers. But we have said enough to show that chess, like all other human inventions, has been subject to progressive change and improvement; for notwithstanding the many anomalies in the modern game, its character is far more scientific and valuable than the game of the 13th, 14th, and 15th centuries. The powers of the pieces, as they at present exist, may be accounted for on very simple principles, if we are allowed to take the bishop and rook as types of all the rest. The diagonal move of the bishop seems to have been borrowed from the ancient game of merelles (to which draughts may also with great probability be traced), and the move of the rook may similarly owe its origin to the πετρεια, or game of pebbles. Now, granting this to be the case, we arrive at a very remarkable result by comparing the powers of the king, the queen, the knight, and the pawn with those of the rook and the bishop:

1. The king may make the shortest rook's move, *or* the shortest bishop's move; *but not both at once.*

2. The queen may make an optional rook's move, *or* an optional bishop's move; *but not both at once.*

3. The knight may make the shortest rook's move, *and* the shortest bishop's move, *both at once.*

4. The pawn may make the shortest rook's move forward, when it does not capture; and the shortest bishop's move forward, when it does capture.

We are disposed, therefore, to think it probable that the moves of the bishop and rook were derived from some game or games more ancient than chess, and that by certain simple extensions, modifications, or combinations of the moves of these two pieces, were derived the moves of the other pieces in the game of chess.

The Dead are like the stars by day;
Withdrawn from mortal eye,
But not extinct, they hold their way,
In glory through the sky;
Spirits from bondage thus set free,
Vanish amidst immensity,
Where human thought, like human sight,
Fails to pursue their trackless flight.

James Montgomery.

LONDON:
JOHN WILLIAM PARKER, WEST STRAND.
Published in Weekly Numbers, price One Penny, and in Monthly Parts, price Sixpence.
Sold by all Booksellers and Newsvenders in the Kingdom.

THE

Saturday Magazine.

Nº. 602. NOVEMBER 20TH, 1841. { PRICE ONE PENNY.

NAKSHI-ROUSTAM, OR THE MOUNTAIN OF SEPULCHRES.

MOUNTAIN OF SEPULCHRES.

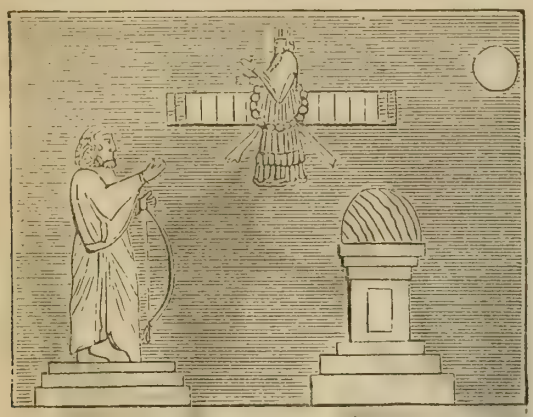
THE extensive ruins of Persepolis, together with the mention made of that city by Greek writers, are sufficient to convince us that it was one of the most important cities in ancient Persia; and yet, owing apparently to its never having been the residence of the Persian kings, we meet with little to elucidate its history, or to satisfy the curiosity which is naturally excited by its magnificent and interesting remains.

Independently of the objects of attraction presented by the site of the city itself, there is a curious specimen of the ancient grandeur of the Persians, situated to the north of Persepolis, and called NAKSHI-ROUSTAM, or the MOUNTAIN OF SEPULCHRES. This mountain abounds in sculptures and excavations, which have long excited the attention of the traveller, the artist, and the antiquary: it rises to an elevation of about three hundred yards, and is composed of a whitish kind of marble, in which the figures and excavations have been cut. At the upper part of the mountain are four excavations which seem intended for tombs. Sir Robert Ker Porter says they are "evidently of a date cöeval with the splendour of Persepolis."

The external appearance of the four sepulchres is similar, and their internal structure probably presents no variety. The excavation examined by Sir Robert Ker Porter is cut about fourteen feet into the solid rock, somewhat in the form of a Greek cross: the upright division of it cannot be less than a hundred feet from end to end. The front of the tomb is ornamented with four round pilasters, distant from each other about seven feet, and as far from the caverned sides of the excavation: their bases terminate by a tor on a plinth, projecting from the face of the tomb one foot six inches: their shafts are crowned by double bulls. An additional capital (composed of three square stones piled on each other, the smallest and lowest fitting into the cavity between the bulls' necks, with the largest stone at the top) supports a plain architrave. The entrance is between the two centre pilasters: the door frame is finely proportioned, with a carved projecting architrave nicely fluted and divided into leaves: but the greater part of the apparent door is only marked to resemble one; the actual entrance being comprised within a square space of four feet six inches.

The division above the front of the tomb is an excavation containing sculptured figures, and is made to resemble a sort of framework for the purpose of inclosing them. The figures are represented with their hands raised, and supporting two beautifully friezed cornices. The drapery of these figures is a short tunic; the waists of some are bound with a simple belt, and of others with a dagger hanging therefrom on the right hip; all are bare-headed, but the bushy appearance of the hair makes it resemble a wig. These figures, together with the cornices they support, form the face of a sort of elevated platform, something like the flat table-tombs of England; but the dimensions are very different. Each side of the structure is finished by a pillar of extraordinary shape. If it be divided into four parts,—the base resembles an urn, on which rests the huge paw and limb of a lion descending from the columnar part of the pillar, which is fluted horizontally half-way up; and from

its summit there issues the head and shoulders of the unicorn-bull, but without ornaments. The back of the neck unites it with the highest cornice, which forms the top of the structure; so that the heads of the two bulls which form the pillars at each end, rise higher than the plane they support. On this plane stands the group shewn in the accompanying illustration. A figure (most



probably representing the *archimagus*, or high-priest,) is elevated on a pedestal of three steps: he is dressed in an ample robe flowing down to his ancles; his left hand grasps a strung bow; his right arm is half extended with the hand quite open; his wrists are ornamented with bracelets; his head is bare, the hair bushy behind and neatly curled; his beard falls to the breast: opposite to him rises another pedestal of three steps upon which is placed an altar, probably containing the sacred fire, a huge flame of which appears at the top. High over it to the right, is a globular figure representing the sun, of which the fire below was esteemed the offspring and the emblem. These altars always stood towards the east, so that the worshipper might face the point of the horizon whence the great source of light ascended; and we here find the orb in such a direction. Another figure floats aloft in the air, between the altar and the archimagus, appearing as if it had issued from the sun; it approaches the man from that point. This aërial personage seems supported by something like a collection of sun-beams, thickly carved in waving, horizontal, and perpendicular lines, interspersed with several divisions of narrow cloud-shaped masses of stone. The radiation is not circular, but forms three distinct collections of rays, pointing east, west, and downwards; they diverge from a ring or halo, out of the midst of which rises the figure; it being entirely above this "beamy chariot," from the waist upwards. It is dressed in a similar robe to that of the priest, with the hair and beard in the same fashion: but the head is covered with a fluted crown; the left hand holds a large and massy ring; the right is elevated and open, as if in the act of admonition; a couple of bands, apparently the ends of his girdle, flow down through the circle, and the beams in which the figure appears, thus proving the aërial texture of the seeming vehicle. "But when we compare its forms, and the workmanship of its details, and its position with regard to its occupier, with the wings and finely-wrought feathers of the bas-relief at Pasargadæ*, we can be in no doubt," says Sir Robert Ker Porter, "from the entire difference between them, that the radii we have been describing, form a means of passing through the air totally distinct from the personage that uses it."

The monumental elevation of which we are speaking, with its altar and other appendages, is comprised within a square frame of stone. On the four external surfaces at the front and the sides, our distinguished traveller found figures three deep, stationed one above the other; those to the right of the altar, and with their faces towards the back of the man on the pedestal, are clothed in robes similar to his: and they have bonnets on their wig-like hair, resembling in shape the crown on the head of the aërial being, but with this difference, that they are not fluted; these figures are armed with spears; there are three of them in a perpendicular line on the front of the western aspect of the frame; and six rank and file on the side. In the opposite direction, on that part of the frame which is to the left of the altar, in the front is a perpendicular line three deep, of figures in precisely the same sort of dress as the spearmen, excepting that they are quite unarmed. These also look towards the altar, and appear as mourners; their left hands being raised to their faces, and holding a part of their garments, as if to wipe away their tears. Another line of figures is sculptured on the side of the frame, of which the mourning figures form the front; but here only one in three is in a weeping attitude.

To penetrate into the interior of the tombs was a work of no little personal danger as well as fatigue. The only means by which a stranger to these heights could reach them was by attaching a rope to his waist, and suffering some strong arms above to haul him upwards.

My mehmandar was at his stories and forebodings again, (says our traveller,) for tempting such dæmon-wrought places. But the peasantry of this district seemed to know better than to have fear of either deev or difficulty; and one of them more active and sinewy than the rest, managed to scramble up the perpendicular cliff, like a rat hanging by a wall; and gaining the ledge of the platform, or vestibule to the tomb, he lowered down a rope, by which some of his nimble companions assisted themselves in ascending. I followed the example by fastening the rope round my waist, and by their united exertions was speedily drawn up to the place of rendezvous. The distance was sufficiently high from the ground to give me time for thought; and during my ascent, in a manner so totally dependent on the dexterity of others, I could not but recollect the fate of half a dozen kinsmen of Darius Hystaspes, who had all perished at once in the very same expedition. Ctesias relates, that this great Persian monarch 'caused a tomb to be dug for him while he yet lived, in the double mountain; but when it was completed, the Chaldean soothsayers forbad him to enter it during his life, under a penalty of some terrible danger. Darius was intimidated; but some princes of his family could not resist a strong curiosity which impelled them to view its interior. They went to the mountain, and by their desire were to be drawn up by the priests who officiated there; but in the act, while they yet hung between earth and air, the sudden appearance of some serpents on the rock so terrified the people above, that they let go the ropes, and the princes were dashed to pieces.' On this very spot, more than two thousand years ago, the catastrophe happened. Certainly being in any noted place, has a most amazing power in bringing two far distant points of time to meet; at least in the mind that contemplates them. I should have read the history of this disaster at home with almost as little concern as if the people had never existed; here I was on the spot where it happened, and the scene was realized; the persons seemed present with me, and I shuddered for them, while I rejoiced in my own safety. To incur the least possible danger to myself and my assistants, I had selected the tomb that was nearest the ground; but even that was upwards of sixty feet above its level; and I came off with not a few bruises, from hard knocks against the rock, in my swinging ascent."

After this perilous ascent our traveller made his way through a low and narrow entrance into a vaulted chamber, completely blackened all over by smoke of some kind, either from lamps or other fires: the place was stifling and gloomy; at its farther extremity were three arched recesses: each contained a trough-like cavity cut down into the rock, and covered with a stone of corresponding dimensions. Every one of these covers had been broken near the corners, evidently to give a view of the contents of the sarcophagus. A light was introduced into the recesses, by which the remotest cranny was seen, and all were found to be alike empty: not even any loose dust was present that might have formerly

* See the account of a remarkable Persian idol, in No. 514 of the *Saturday Magazine*.

belonged to some mouldered inhabitant. If these covers were at any time ever removed, they must have been very carefully replaced. The open space of the chamber between the catacombs and the door is about five feet; the entrance had been originally closed by a block or blocks of stone, the deep holes being visible on each side which received their pivots:—

I observed, (says our traveller,) some vestiges within, of the mode of hanging so ponderous a security; but the avidity of the spoilers for lead and iron has injured every part where the objects of their cupidity could be rent away. The surface of the door, as it appears without, is divided into four compartments; the lower one is entirely taken away, being now quite open to the air, with a small part also of the second division broken off, which probably happened when the passage was forced. When we look on these violences, committed on the last resting-places of the great, we cannot but be sensible that the humblest graves are the securest.

Every charity school for the instruction of the poor in the principles of our Church, and for their discipline in habits of industry and godliness, is to be considered as one of the bulwarks of our country; as a fortress, which it would be madness not to keep in repair; as a monument of the zeal and piety of our forefathers, which cannot, without sacrilegious neglect, be suffered to decay.—Le Bas.

WHAT IS HONEY-DEW?

In the summer months, when the weather is hot and dry, the foliage of trees and plants is often found covered with and rendered glossy by a sweet clammy substance known to persons resident in the country by the name of *honey-dew*; they regard it as a sweet substance falling from the atmosphere. The production of this substance has led to as many conjectures as that of Blight, notic in a former article. Dr. Mason Good says:—

I have seen a hop-ground completely over-run and desolated by the *Aphis humuli*, or hop green-louse, within twelve hours after a honey-dew (which is a peculiar haze or mist loaded with poisonous miasm) has slowly swept through the plantation, and stimulated the leaves of the hop to the morbid secretion of a saccharine and viscid juice, which, while it destroys the young shoots by exhaustion, renders them a favourite resort for this insect, and a cherishing nidus for myriads of little dots that are its eggs. The latter are hatched within eight and forty hours after their deposit, and succeeded by hosts of other insects of the same kind.

It has often happened to writers on natural history, that, while they successfully oppose those prejudices of opinion or vulgar errors which, from being constantly admitted without dispute, have obtained the strong hold of habit on the mind, yet fall into other prejudices, namely, those of sense or personal observation, and thus explode one error by the introduction of another which is more dangerous than the first because it receives the support of a learned man. Sir John Herschel says:—

Our resistance against the destruction of the other class of prejudices, those of sense, is commonly more violent at first, but less persistent, than in the case of those of opinion. Not to trust the evidence of our senses, seems, indeed, a hard condition, and one which, if proposed, none would comply with. But it is not the direct evidence of our senses that we are in any case called upon to reject, but only the erroneous judgments we unconsciously form from them, and this only when they can be shown to be so *by counter-evidence of the same sort;* when one sense is brought to testify against another, for instance, or the same sense against itself, and the obvious conclusions in the two cases disagree, so as to compel us to acknowledge that one or other must be wrong.

The short extract we have given from Dr. Good, contains several prejudices both of opinion and of sense. The entomologist is peculiarly liable to error, not only from the minuteness of the objects observed, but from the difficulty which often exists of distinguishing between a cause and an effect. The following details will enable the reader to trace to their source the errors contained in the quotation, and to furnish an answer to the question, "What is honey-dew?"

During summer, if we examine almost any species of plant, an immense number of small insects will be found placed side by side, in large masses, upon the stalks and leaves. These insects are called Aphides, *pucerons*, or *plant-lice*. The history of these little animals has been written with great care by some of the most celebrated naturalists; and many truly remarkable details have been supplied, which are too well authenticated to admit of dispute. But as the nature of these details renders them unfit for our pages, we pass on to the more immediate subject of the present article.

The aphides on the leaves or stems of trees appear to be in a state of total inaction; but they are in fact busily occupied in extracting the juices of the plant with their proboscis. Their punctures frequently cause sensible alterations and damage to the leaves, and even to the stems of trees, which become bent and contorted on the side attacked by the insects.

The curvings thus effected, (says Mr. Rennie,) become very advantageous to the insects, for the leaves, sprouting from the twig, which naturally grow at a distance from each other, are brought close together in a bunch, forming a kind of nosegay, that conceals all the contour of the sprig, as well as the insects which are embowered under it, protecting them against the rain and the sun, and at the same time hiding them from observation. It is only requisite, however, wherever they have formed bowers of this description, to raise the leaves, in order to see the little colony of the aphides, or the remains of those habitations which they have abandoned. We have sometimes observed sprigs of the lime tree, of a thumb's thickness, portions of which resembled spiral screws, but we could not certainly have assigned the true cause for this twisting, had we not been acquainted with the manner in which aphides contort the young shoots of this tree.

The leaves of gooseberry, currant bushes, apple trees, &c., are often seen covered with tuberosities; and on examining the under side of the leaf, a crowd of small insects will be seen feeding on the juices of the leaf and shielded from the weather and many of their enemies. On the leaves of the elm, the aphides produce vesicles, or hollow galls of about the size of a walnut and sometimes larger, within which a whole colony resides and the female deposits her eggs.

Most of the aphides are covered more or less with a cotton-like down. In those which infest the plum-tree and the cabbage this covering resembles flour. Those which live in the vesicles of the elm are entirely covered with this substance. In the aphides of the poplar it is in the form of cotton threads; but it exists in largest quantity on the aphides of the beech tree, on which species the threads are sometimes an inch in length; they are but slightly attached, and may easily be removed.

Were it not that the aphides are frequently exposed to the attacks of powerful enemies, it is probable that they would multiply to such an extent as totally to destroy the plants whose juices they suck. The various species of lady-birds, both in the larva and perfect state, feed entirely on aphides. They place their eggs on a leaf where aphides abound, and when the young are hatched they find themselves surrounded by their prey. The larvæ of many species of two-winged flies (*Syrphidæ*) also commit great havoc among the aphides. Mr. Kirby, in speaking of one of these larvæ, says:—

When disposed to feed he fixes himself by his tail, and being blind, gropes about on every side, as the Cyclops did for Ulysses and his companions, till he touches one, which he immediately transfixes with his trident, elevates into the air, that he may not be disturbed with its struggles, and soon devours. The havoc which these grubs make amongst the aphides is astonishing.

The larvæ of the lace-winged flies are such enemies to the aphides, that Reaumur called them "the lions of the aphides." The horticulturist removes large numbers of these destroyers of vegetables by means of a moistened

brush, or by burning sulphur or tobacco and conducting the vapours or the smoke by means of a bellows or a funnel to the parts affected.

So vast and so rapid is the increase of aphides, and so constantly are they engaged in sucking the juices of plants, that the reader need not be startled with the assurance that these little insects are the sole cause of the honey-dew which is often found so abundantly on the foliage of plants during summer. This fact is now established by the repeated observations of eminent naturalists; but for the sake of brevity, we propose to follow the details of Mr. Curtis on this curious subject.

Were a person accidentally to take up a book in which it was gravely asserted that in some countries there were animals that ejected from their bodies liquid sugar, he would soon lay it down, regarding it as a fabulous tale calculated to impose on the credulity of the ignorant; and yet such is literally the truth. The superior size of the *Aphis salicis* will enable the most common observer to satisfy himself on this head. On looking steadfastly for a few minutes on a group of these insects, while feeding on the bark of the willow, one perceives a few of them elevate their bodies, and a transparent substance is evidently ejected from the two horns which the aphides have at the hinder part of the body: this is immediately followed by a similar motion and discharge, like a small shower, from a great number of others.

On placing a piece of writing paper under a mass of these insects, it soon became thickly spotted. Holding it a longer time the spots united, from the addition of others, and the whole surface assumed a glossy appearance. I tasted this substance, and found it as sweet as sugar. I had the less hesitation in doing this, as I had observed that wasps, flies, ants, and insects without number, devoured it as quickly as it was produced: but were it not for these it might no doubt be collected in considerable quantities, and if subjected to the processes used with other saccharine juices, might be converted into the choicest sugar or sugar-candy.—CURTIS.

The aphides produce this substance in so large a quantity that the vesicles of the elm and the tuberosities of the gooseberry and currant-bushes often contain globules as large as a pea. It is at first limpid and transparent, but becomes thick by exposure to the air.

The origin of honey-dew is now completely established; but as the notion that this substance is formed in the atmosphere is still a favourite mode of accounting for its production, we will say a few words on the subject: and we may also notice another opinion, that honey-dew is an exudation from the plant itself.

If honey-dew fell from the atmosphere it would cover everything indiscriminately: whereas it is never found except on certain living trees and plants. It is also found on plants confined within hot-houses and green-houses. It is found more abundantly on healthy than on sickly trees, because the aphides select only the youngest and most healthy shoots. If the honey-dew exuded from the plant, it would present certain general and uniform appearances on all the leaves; but its appearance is very irregular, not being alike on any two leaves, some leaves having none of it, and others being only partially covered. Mr. Murray, who ascribes honey-dew to an electric change in the air, opposes the now received opinion of its production by aphides, on the ground that the substance "was very abundant on those plants that were entirely free from aphides;" but these little insects are very likely to escape notice unless we look in the right place: they are careful to eject the honey-dew to a distance from where they may be feeding. The source of the honey-dew on certain leaves must often be looked for in the leaves above, in the under surfaces of which myriads of aphides may lie hid. If anything should intervene between the aphides and the leaf next between them, there will be no honey-dew on that leaf.

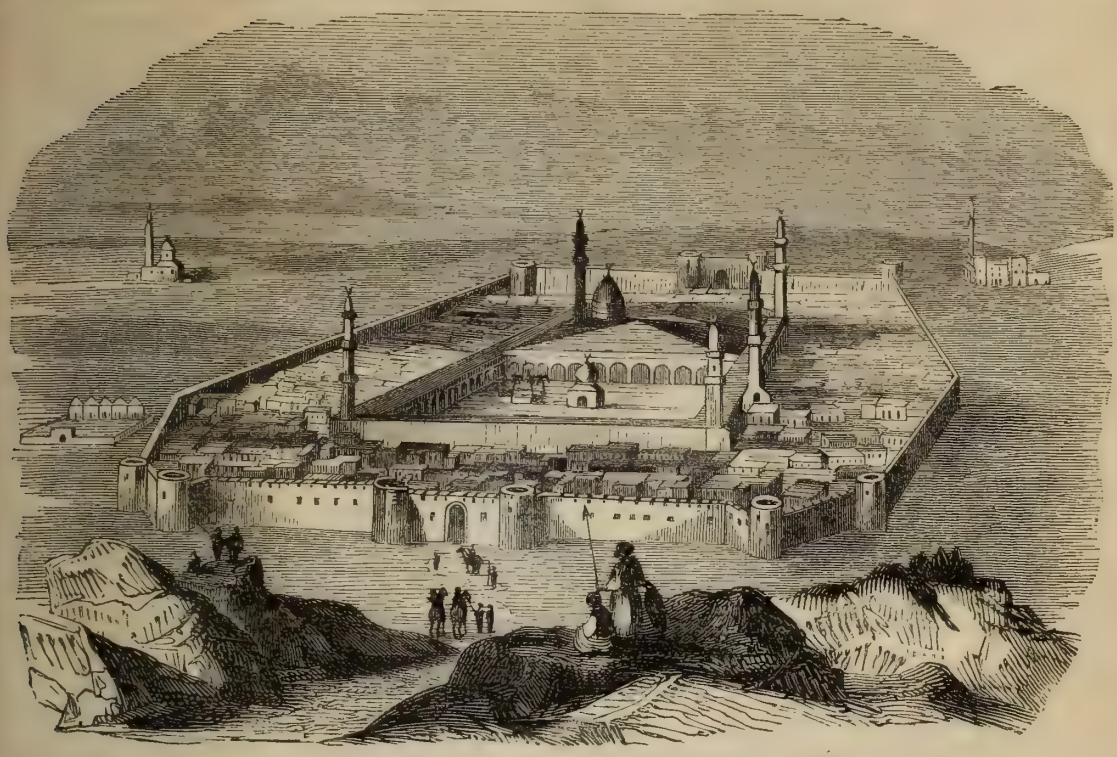
Mr. Curtis has noticed, that where the saccharine substance has dropped from the aphides for a length of time, as from the Aphis salicis in particular, it gives to the surface of the bark, foliage, or whatever it has dropped on, that sooty kind of appearance which arises from the explosion of gunpowder, which greatly disfigures the foliage, &c., of plants. It is often mistaken for a kind of black mildew, which it greatly resembles.

A BLIGHTED BRANCH.

TRULY it is difficult, in passing along the countries of which I am speaking (the neighbourhood of the Rhone), if we will but use our eyes at all, not to be forced to confess the irresistible and abundantly sufficient power of the agencies in daily operation to explain the dissolution which everything on the earth is undergoing. This progress may indeed be called slow in comparison to the quick march of our petty span of life; but the wear and tear of the mountains, and their final extinction, is no less a matter of physical fact than our own mortality is. It cannot, indeed, be denied that the Alps and Andes are longer-lived than we,—but even their age,—that of the hoariest-headed peak among them, Mont Blanc or Chimborazo, or the blushing Monte Rosa,—is really but an instant of time—a mere fraction—an infinitesimal moment—a single beat of the great clock of time, to say nothing of eternity! It is just the same when we come to speak of distances, since our longest stretch on earth, "from China to Peru," from "Indus to the Pole," or even our longest measurable spaces in the heavens, the aphelion of our most eccentric comet, lying millions of millions of miles beyond the orbit of Uranus,—what are they but insignificant portions of space, mere hair-breadths in the vast scale of even the visible or conceivable parts of astronomy?

To some minds these speculations, or, to speak more properly, these absolute certainties, are sources of pain and bewilderment rather than of pleasure. But it appears to me that, if well conducted, they are adapted to do good, by rendering us more contented with our lot, and more earnest in the performance of our duty, by filling our lives with more lofty and more cheerful objects of pursuit. It is surely a delightful reflection, and one filled with the brightest hopes, that, insignificant as we are, we are still capable of seeing and understanding so much of these things, and that we are permitted to reason upon them to a great extent, though we can see neither their beginning nor their end, nor can we interrogate their purpose. When rightly employed such speculations give, if anything on earth can, a foretaste of immortality, and tell, both to the reason and to the imagination, that the soul is not perishable: and thus, all such pursuits as geology and astronomy, properly carried on, do essentially contribute to fortify our faith in Revelation, by inculcating, or as it were enforcing the grand doctrine of dependence, and making us feel, at every turn, how powerless we are, and how powerful is our Maker, and yet how beneficent, and, above all, how uniform and how admirably consistent in all his operations.—CAPTAIN BASIL HALL.

TURKEY AND THE TURKISH PROVINCES.



MEDINA, THE BURIAL-PLACE OF MOHAMMED

HAVING already given a brief account of Mecca, we proceed to offer a similar notice of Medina, which is also one of the holy places of the Mohammedans. It may be well to glance at the geographical position of Medina, with respect to surrounding places.

In following the course of the Mediterranean from west to east, our progress is finally arrested by the coast of Syria, which forms its eastern termination; and at the southern corner of this coast, forming the south-eastern extremity or corner of the Mediterranean, we meet with a spot which is a boundary between Syria, Arabia, and Egypt, and also an isthmus of separation between the Mediterranean and Red Seas. From this isthmus the Red Sea extends, nearly in a south-eastern direction, for a distance of two thousand miles, till it joins the Indian Ocean. The coast then trends round towards the north-east, till we arrive at the entrance of the Persian Gulf, up which we ascend nearly in a parallel direction to the Red Sea. Now all the immense country bounded by these coasts,—the Red Sea on the west, the Indian Ocean on the south, and the Persian Gulf on the east, comprising an extent of territory more than three times as large as that of France,—is known by the general name of Arabia.

It is towards the western coast of this large peninsula that we must look for the city of Medina. It lies at a few days' journey from the coast (estimated, as "days' journeys" are in the East, by the rate of a camel's progress,) at about one third of the length of the Red Sea from its upper end, that is, about twice as far from the Straits of Bab-el-Mandeb on the south, as from the Isthmus of Suez on the north. On the western shore of the Red Sea, opposite Medina, we meet with the sandy desert which separates that sea from the fertile valley of the Nile; and eastward of Medina, we likewise meet with sandy deserts, so that were it not for the intervention of the Red Sea, the town would seem to be in the heart of a desert. We now proceed to speak of the town itself, and its inhabitants.

Medina (the ancient *Yathreb*), although the place of burial of the prophet Mohammed, is neither so celebrated as Mecca, nor is it considered so much an act of duty to make pilgrimages thither. A considerable number, however, of those who have gone through all the ceremonies and observances at Mecca which are necessary for their attainment of the title of hajjis, usually join the Syrian caravan, or form themselves into small detachments, in order to visit the tomb of their prophet. The distance between these two cities is about two hundred and seventy miles; and the time occupied by the journey is ten or eleven days, during which the pilgrims must be content to undergo many inconveniences and dangers; there being no public khan or place of accommodation for travellers through the whole route, and the depredations of Arab robbers being frequent and daring.

The city of Medina is situated on the edge of the Great Arabian Desert. A circle of twelve miles round the place was originally considered as holy ground, in accordance with the strict injunctions of Mohammed himself; but this precept is forgotten or entirely unobserved. The town is tolerably well built; the houses are for the most part two stories high, and entirely of stone. The principal streets are paved; but the rest are poor and narrow, only measuring two or three paces across. The city is surrounded by a wall, and on a small rocky elevation stands the castle, inclosed by a thick stone rampart, between thirty-five and forty feet high, flanked by towers, and defended by a ditch.

Unlike Mecca, the city of Medina is well supplied with water by means of wells and subterraneous canals, which are scattered throughout its extent; and in consequence it is not so entirely bereft of vegetation, or so dependant on other places for its supplies, as the former city. The suburbs extend to the south and west, and occupy a larger space of ground than the city itself, from which they are separated by an open space containing gardens, markets, and a few huts. There are very few public edifices at Medina; and for such as there are, the city is indebted to the Sultans of Egypt and Constantinople.

The inhabitants of Medina are a mixed race, the

greater part of whom derive their origin from foreigners who have been induced to settle in the city, with the hope of acquiring gain, in their traffic with the pilgrims. In the course of a few generations these settlers become Arabs in feature and character. They live in a very poor style, and display much gravity and circumspection in their outward deportment; but they are not more free from vice and immorality than the inhabitants of Mecca; indeed it is notorious that the Mohammedans of these two cities, where we might expect to see the influence of the better part of their religion especially predominant, are more depraved and immoral than those of any other city or country in the world.

The mosque which contains the tomb of Mohammed, and which is the principal means of support of the inhabitants of Medina, is situated towards the eastern extremity of the town. It bears some resemblance to the Temple of Mecca, being an open square, divided by a partition into two compartments, and surrounded on all sides by covered arcades; its dimensions, however, are considerably less, being 165 paces in length, and 130 in breadth. This mosque was greatly improved by the Caliphs, who bestowed on it many generous donations; and after its complete destruction by a fire, occasioned by lightning, when nothing remained but the tomb of the prophet, the restoration of the mosque was undertaken by the Sultan of Egypt, who erected it in its present form, in the year of our Lord 1487. There are five minarets, and four gates to this mosque: the principal entrance is extremely handsome; the sides of the gate being inlaid with marble and glazed tiles of various colours, which give it a dazzling appearance. At this gate the hajjis are obliged to enter when they first arrive at this city of the prophet, and at a fountain immediately in front of it, they are expected to perform their ablutions, ere they advance into the sacred area. In the northern division of the square stands a small building, in which are deposited lamps for the use of the mosque. The situation of the famous sepulchre of the prophet, is indicated in our engraving by the cupola, which surmounts the roof of the mosque, near one of the minarets. To preserve this venerated tomb from the too near approach of the devotees, it is surrounded by an inclosure called *El Hejra*, consisting of many columns supporting an arched roof; and these again are encircled by an iron railing thirty feet high, of so close a texture and so thickly interwoven with inscriptions, as effectually to hide the interior. There are several small windows in this iron screen, and at the principal of these the pilgrims offer their devotions. The glimpse which is obtained of the space inclosed by the railing, merely informs the worshipper that a rich curtain is carried round on all sides, resembling that of a bed, and that it is of the same height as the railing itself. The curtain or veil is of silk brocade of various colours, interwoven with silver flowers, and having a band of inscriptions in gold characters, running across the middle, like that of the covering of the Kaaba. Within this curtain no persons are allowed to enter, except those whose peculiar privilege it is to take care of the tomb, and to put on the fresh curtain on the accession of a new Sultan to the throne of Constantinople; for, as in the case of Mecca the splendid covering of the interior of the walls of the Kaaba is provided by the new Sultan, so here, the curtain for the prophet's tomb is received as a donation from the same hand. The remnants of this sacred brocade are sent back to Constantinople, and are used as a covering to the tombs of the sovereigns and princes there.

It is not the tomb of Mohammed alone, which occupies the space within this double inclosure; for there also are deposited the remains of his two friends, Abu Beker and Omar. The three tombs are said to be of plain mason work, covered with precious stuffs; but the accounts of different authors vary considerably as to their form and position. Lamps are suspended all around the curtain and are kept burning during the night; their number has been extravagantly stated at three thousand; but an eye-witness has declared them to amount to little more than one hundred. The story of the suspension of the prophet's coffin in the air by means of two powerful magnets, appears to have been an invention of the Greeks and Latins. The Moslems are so far from acknowledging themselves the authors of this fable, that they smile at the credulity of foreigners, at having for a moment given credence to the tale.

The visit to the mosque and tomb of Medina is not obligatory on "the faithful;" yet it is thought to be an act highly pleasing to the Almighty, and expiatory of many sins, while it entitles the pilgrim to claim *as a right*, the patronage of the prophet in heaven. So anxious are the inhabitants of Medina to confer importance on their city and on the tomb of their prophet, that they declare one prayer said within sight of the Hejra to be as efficacious as a thousand said in any other place except Mecca: and that whoever repeats forty prayers in this mosque will be saved from the pains of hell-fire after death. These assertions are calculated to attract numbers of poor misguided devotees, who, ignorant of the true and only expiation for sin, or unable clearly to discern it through the cloud of traditions imposed on them by their false prophet, are eagerly seeking to atone for the sins of their past lives, by a toilsome and dangerous pilgrimage, and an empty round of observances, which are little calculated to give peace to the conscience or satisfaction to the mind. Medina is reported to have been the depository of immense treasures in former days; but these accounts are probably much exaggerated; and though in the sanctuary of this mosque the precious things of Hejaz were certainly kept at one time, and formed no doubt a collection of great value, yet we are not to believe implicitly the stories of its vastness and immense extent. Notwithstanding the splendid exterior of the mosque, and the gay colours with which it is decorated, there is no appearance of real riches there at the present day.

It will bear no comparison (says Burckhardt) with the shrine of the most insignificant Catholic saint in Europe, and may serve as a convincing proof, that, whatever may be their superstition and fanaticism, the Moslems are not disposed to make the same pecuniary sacrifices to their religious foundations, as the Popish, or even the Protestant Christians do for theirs.

Medina is, or was lately, under the government and authority of a Turkish commander, who takes the management of the pecuniary affairs of the mosque, and of all other ecclesiastical matters. Next to him in importance is the Cadi; and many of the native Sheiks are held in great respect.

To have no assistance from other minds in resolving doubts, in appeasing scruples, in balancing deliberations, is a very wretched destitution.—DR. JOHNSON.

LINES BY DR. SOUTHEY ON HIS LIBRARY.

My days among the dead are passed,
Around me I behold
Where'er these casual eyes are cast,
The mighty minds of old;
My never-failing friends are they
With whom I commune day by day
With them I take delight in weal,
And seek relief in woe:
And while I understand and feel
How much to them I owe,
My cheeks have often been bedew'd
With tears of thoughtful gratitude,
And from their lessons seek and find
Instruction with an humble mind

OLD ENGLISH NAVIGATORS.

Willoughby, Chancelor, and Burroughs. I.

It is our intention to devote the present and one other paper to the lives of the naval commanders whose names are given above, because they may be called the friends and disciples of the illustrious Cabot, and because their labours were, for the most part, exerted jointly in the prosecution of a very memorable polar voyage.

Sebastian Cabot, as we have already observed (p. 12), was driven to the necessity of soliciting employment from the court of Spain, in consequence of the temporary abandonment of maritime enterprise on the part of the English. It so happened, however, in the year 1553, in the reign of Edward the Sixth, that the merchants of London projected a voyage, having in view to reach, by way of the north and north-east, the opulent and celebrated regions of India and China, and that Cabot was now in London again, having been created grand pilot of England, and constituted "governour of the mysterie and companie of the marchants adventurers for the discoverie of regions, dominions, islands, and places unknowen." The merchants, having consulted with Cabot, resolved upon the expedition, and an association was formed, by which the undertaking was carried on in shares of 25*l.*, so that the sum of 6000*l.* was soon raised, which was expended in the construction and equipment of three vessels fitted for northern and tropical navigation. The youthful monarch favoured the design, and lent his countenance to the undertaking.

As the promoters of this expedition had no doubt of its success, and made sure of reaching the Indian seas by way of the pole, they omitted none of those precautions which were deemed necessary for the safety of vessels navigating the tropical seas,—hence they caused the ships to be sheathed with lead, thinly laid on, in order to defend them from the worms that were found to be destructive to wooden sheathing in warm climates. This is the first account we have of ships coated in England with a metallic substance, though the practice had been long familiar to the Spaniards.

The ships being provisioned for eighteen months, Sir Hugh Willoughby was appointed captain-general of the expedition; Richard Chancelor was made pilot-major of the fleet, and nominated to the command of the "Edward Bonadventure;" and Stephen Burroughs acted as master of Chancelor's vessel.

It was probably owing to his advanced age that Cabot himself did not accompany the expedition, but he drew out a series of instructions, in which the whole conduct to be observed by the officers and crew is carefully laid down. We will here give a slight sketch of these rules, which, though generally good and useful, are not, as the reader will see, perfectly unexceptionable.

Strict attention is enjoined to private conduct and morals: prayers are directed to be read morning and evening on board each ship, either by the chaplain or master, and no "ribaldry or ungodly talk, dicing, carding, tabling, nor other devilish games," are permitted.

All acts tending to a breach of discipline are prohibited, "conspiracies, part-takings, factions, false tales, which be the very seeds and fruits of contention."

The steering of the ship was to be regulated by a council of twelve, the captain having only a double vote. A daily record of the course of navigation was ordered to be taken, together with celestial observations, the aspect of the lands along which they sailed, and any other interesting occurrence. The masters of the different ships were to meet weekly, compare these records, and enter the result into a common ledger.

Various regulations are drawn up for keeping weekly accounts, maintaining the cook-room, and other parts of the ship clean, and preventing any liquor from being pilled upon them.

The mariners were directed to treat the natives of the countries which they visited with consideration, gentleness, and courtesy; and without any disdain, laughing, or contempt. All fair means were to be used for alluring them on board, where they were to be well-treated and clothed, in order to attract others:—it was intimated that it would be well to intoxicate them, in order to get at their secrets. They were to use great circumspection in their dealings with strangers; and, if invited to dine with any lord or ruler, to go well-armed, and in a posture of defence.

The sailors' uniforms were to be worn only on particular occasions, when it was desirable to show them off "in good array for the advancement and honour of the voyage." They are warned not to be alarmed when they saw the natives of any place dressed in lions' and bears' skins, with long bows and arrows, as this formidable appearance was often assumed merely to inspire terror. The shark and the alligator were probably alluded to, when the sailors were told that there were persons armed with bows, who swam naked, in various seas, havens, and rivers, "desirous of the bodies of men, which they covet for meat," and against whom it was necessary to keep diligent watch night and day.

The principal recommendations for the election of Sir Hugh Willoughby to the supreme direction of the enterprise, seem to have consisted in his high birth, his tall and handsome person, his valour and skill in war, and his heroic disposition: these qualities seem to have been regarded over and above nautical experience, which essential requisite is not even mentioned.

When the ships lay at Greenwich, where the court at that time resided, the mariners received every mark of royal favour, which could cheer and encourage men embarking on a dangerous and important enterprise. King Edward addressed a circular letter to all "kings, princes, rulers, judges, and governors of the earth;"—he spoke of the benefits of universal friendship;—the duty of showing kindness to strangers, and particularly to merchants;—he desired free passage for Sir Hugh Willoughby and the others with him, promising to make a suitable return, whenever the occasion of foreigners visiting England might occur. The ships set sail from Greenwich on the 10th of May, in order to have some fine summer weather before them. The king himself was confined by illness at this time; but the principal courtiers stood at the palace-windows, the rest of the household mounted the towers, while the people in crowds lined the shore. The ships fired their guns, causing the hills and valleys to resound; and "the mariners shouted in such sort that the sky rung with the noise thereof. In short, it was a very triumph."

After stopping a few days at Blackwall, the expedition sailed down to Woolwich and Gravesend, and thence to the coast of Essex, where contrary winds unfortunately detained them till the 23rd. Then, with a favouring gale, they quitted England, and directed their course into the expanse of the German Ocean. Their commander was desirous of touching at the coast of Scotland; but this was rendered impossible by contrary winds, which obliged him also to make frequent changes of course, "traversing and tracing the seas." On the 14th of July they got among the islands which fringe the coast of Norway, and at length arrived at the larger range of the Loffoden Isles, whence they sailed to the large island of Senjan, where, finding themselves ignorant of the relative situations of the islands and the coast, they endeavoured in vain to procure a pilot. As they approached the northern cape of Europe, Sir Hugh assembled the commanders and exhorted them to keep close together; but in case of separation, he appointed a rendezvous at Wardhuys, understood to be the principal port of Finmark. The weather soon became rough in the extreme; and, being obliged to stand out to sea, amid the thick mist of a stormy night, the vessels of Willoughby and Chancelor separated, and never again met.

According to the account of Clement Adams, who was with Chancelor, it appears that, as they were driving before the gale, the admiral loudly and earnestly called upon them to keep close to him; but that he himself carried so much sail, and his vessel was so superior, that Chancelor could not possibly obey the order. The other ship was called the "Bona Confidentia," with which the commander continued his voyage; but was astonished and bewildered at not discovering any symptom of land; whence it appeared that "the land lay not as the globe made mention." The maps of those days were, as we may naturally suppose, exceedingly imperfect; so that, after sailing about in various directions for very many days, towards the pole,—eastward and westward,—and then looking for land towards the south, and having in vain attempted to land at Nova Zembla, they proceeded upon a new tack, and at length saw the coast of Russian Lapland. Here they must have been very near the opening into the White Sea, into which had they entered, they might have reached Archangel, and spent the winter in comfort and security with Chancelor and the others, who had reached that place in safety, as we shall relate in our next article. Unfortunately, however, instead of keeping southward when out at the mouth of Waranger Fiord (or gulf), they sailed away again to the west, in the hope probably of reaching Wardhuys, which they missed, and which was the only point in those immense seas of which they had any distinct knowledge. The coast was naked, uninhabited, and destitute of shelter, except at one point, where they found a shore bold and rocky, but with some good harbours. Here, though it was only the middle of September, they began to feel the premature rigours of a northern season; intense frost, snow, and ice, driving through the air as though it had been the depth of winter. On these desolate shores, therefore, they settled down to wait for the ensuing spring; while rein-deer, foxes, Polar bears, and "divers beasts to them unknown, and therefore wonderful," haunted their settlement, as if surprised by the novelty of the fresh tenants of the soil.

Nothing more was heard of Sir Hugh Willoughby and his brave associates, until, a long time after, tidings reached England, that some Russian sailors, as they wandered along these dreary boundaries the year after, had been astonished by the view of two large ships, which they entered, and found the crews all lifeless, to the number of about seventy persons, whom they judged to have perished from cold and hunger. The remains of the unhappy sufferers were found on a barren and uninhabited part of the eastern coast of Lapland, at the mouth of a river called Arzina, not far from the harbour of Kegor. From papers found in the admiral's ship, and especially by the date of his will, it appeared that most of the company of the two ships were alive in January, 1554. They had entered the river on the 18th of September preceding. The journal of Sir Hugh Willoughby contains the following reference to their distressed situation:—

Thus remaining in this haven the space of a weeke, seeing the yeere farre spent, and also very evil wether, as frost, snowe, and haile, as though it had been the deepe of winter, we thought it best to winter there. Wherefore we sent out three men south-south-west, to search if they could find people; who went three dayes journey, but could find none. After that we sent out other three westward, four dayes journey, which also returned without finding any people. Then sent we three men south-east, three dayes journey, who in like sorte returned without finding of people or any similitude of habitation.

The unhappy fate of Willoughby and these early English navigators is thus finely, but pathetically, alluded to by Thomson:—

Miserable they
Who here entangled in the gathering ice
Take their last look of the descending sun;
While, full of death, and fierce with tenfold frost,
The long long night, incumbent o'er their heads,
Falls horrible. Such was the Briton's fate,
As with first prow, (what have not Britons dared!)
He for the passage sought, attempted since
So much in vain, and seeming to be shut
By jealous Nature with eternal bars.
In these fell regions, in Arzina caught,
And to the stony deep his idle ship
Immediate sealed, he with his hapless crew
Each full exerted at his several task,
Froze into statues; to the cordage glued
The sailor, and the pilot to the helm.

In our next paper we shall pursue the adventures of Chancelor and Burroughs, after their parting from Willoughby

---

THE LIBRARY.—Heinsius, keeper of the library at Leyden, was mewed up in it all the year long; and that which to thy thinking should have bred a loathing caused in him a greater liking. "I no sooner," saith he, "come into the library, but I bolt the door to me, excluding lust, ambition, avarice, and all such vices, whose nurse is Idleness, and their mother Ignorance, and in the very lap of eternity, amongst so many divine souls, I take my seat with so lofty a spirit and sweet content, that I pity all our great ones and rich men that know not this happiness."—BURTON.

IF a man were to apply all his strength directly to a rock or to a box of merchandise, which he wishes to elevate to some point, he might not be able to move it at all; or at least he might not be able to raise it to the required height. But with a lever, or with a wheel and axle, or a pulley, he effects his object with ease. Here he does not actually gain power: he gains the means of *acting upon the resistance by degrees*. It is like taking this rock to pieces, and carrying up the parts separately; and a little reflection must convince us, that when we employ a machine, we exert not only all the force that would be requisite in such a case, if we did not use the machine, but also as much more as is necessary to overcome the friction and weight of that machine. It is a great error to suppose that, by any mechanical device, force can be *generated*, or even augmented. Misled by such a notion, projectors have imagined that they could adjust levers, pendulums, &c., that would act with a power greater than that which they derived from any external source. It is obvious, and should ever be kept in mind, that the *inertia* of matter, in virtue of which, no particle of it ever moves except in obedience to some force impressed upon it, and in proportion to that force, renders all such projects entirely impracticable. Universally, to overcome a resistance, a force must be exerted equal to that resistance; and, as we have already said, if it be exerted through a machine, the force must be absolutely greater than that resistance. But, on the other hand, force is made up of velocity and the quantity of matter; and hence, if the mass to be moved, or the resistance to be overcome be much heavier than the moving power, we equalize them, if we can, by giving to the *resistance a much slower motion than that which the power has;* thus making the greater velocity of the power compensate for its inferior weight or mass. In all these cases, however, time must be lost; and it must be remembered, as a general principle, that whatever advantage is *gained in respect to power is lost in respect to time**. A man with a machine does no more than in the same time he would have done without a machine, provided he could have divided the resistance into separate parts. In many cases, however, this is impossible; and hence we are enabled, by the aid of machines, to effect what, without them, would have been altogether beyond our power.—*Science and the Arts of Industry.*

* Archimedes is said to have boasted, that, if he had a place on which to stand, he would move the earth. Had such a place been furnished him, and had he been able, moreover, to move with the velocity of a cannon ball, it would have taken him a million of years to have shifted the earth only the twenty-seventh hundred thousandth part of an inch.

LONDON:
JOHN WILLIAM PARKER, WEST STRAND.
PUBLISHED IN WEEKLY NUMBERS, PRICE ONE PENNY, AND IN MONTHLY PARTS, PRICE SIXPENCE.
Sold by all Booksellers and Newsvenders in the Kingdom.

THE

Saturday Magazine.

Nº 603. NOVEMBER 27TH, 1841 { PRICE ONE PENNY.

THE BANKS OF THE THAMES. X.

THE THAMES, FROM RICHMOND HILL.

Say, shall we wind
Along the streams? or walk the silent mead?
Or court the forest glades? or wander wild
Among the waving harvests? or ascend,
While radiant summer opens all its pride,
Thy hill, delightful Sheen? Here let us sweep
The boundless landscape: Now the raptured eye
Exulting swift, to huge Augusta* send,
Now to the sister hills† that skirt her plain,
To lofty Harrow now, and now to where
Majestic Windsor lifts his princely brow.
In lovely contrast to this glorious view,
Calmly magnificent, then will we turn
To where the silver Thames first rural grows.
There let the feasted eye unwearied stray;
Luxurious, there, rove through the pendent woods,
That nodding hang o'er Harrington's retreat;
And stooping thence to Ham's embow'ring walks,
Slow let us trace the matchless vale of Thames;
Fair winding up to where the Muses haunt
In Twickenham bowers, and for their Pope implore
The healing god; to royal Hampton's pile;
To Claremont's terraced height, and Esher's groves,
Where in the sweetest solitude, embraced
By the soft windings of the silent Mole,
From courts and senates Pelham finds repose.
Enchanting vale! beyond whate'er the Muse
Has of Achaia or Hesperia sung!
O vale of bliss! O softly-swelling hills!
On which the power of cultivation lies,
And joys to see the wonders of his toil.—
Heavens, what a goodly prospect spreads around,
Of hills and dales, and woods, and lawns, and spires,
And glittering towns and gilded streams, till all
The stretching landscape into smoke decays.

In these beautiful lines—whose length will be pardoned on account of their beauty—does the poet Thomson speak of the far-famed view from Richmond Hill.

* Poetical writers often allude to London under the designation of *Augusta*, one of the names by which it was known in the times of the Romans. † Highgate and Hampstead.

The town of Richmond is but a mile or two distant from Twickenham, where we left the reader in our last article; yet the whole distance is so studded with attractive and picturesque objects, as to seem much more extensive than it is. Bolingbroke, Peterborough, Pope, Thomson, Reynolds, Horace Walpole, Garrick, Colman, and many other distinguished men, have given a never-dying celebrity to the very small district included within two or three miles of Twickenham, and of which Richmond forms a part; a celebrity arising either from their poetical and pictorial allusions to the scenery, or from their having dwelt on the banks of the Thames at this part.

The town of Richmond, containing about six thousand inhabitants, has been a good deal connected with the reigning families of England. The manor became the property of the Crown in the time of Edward the First, who, as well as his next two successors, resided here. The last-mentioned monarch built a palace here; and since his time, the manor has been the residence of many members of the royal family. Queen Ann, wife of Richard the Second, died here; an event which so affected the king, that he abandoned the palace and allowed it to become ruinous, but it was restored with great splendour by Henry the Fifth. Having been destroyed by fire in 1498, the palace was rebuilt by Henry the Seventh, who changed the name from *Sheen*, which it had hitherto borne, to *Richmond*, from the place of that name in Yorkshire, the earldom of which was one of Henry's titles. Philip the First of Spain, and Charles the Fifth of Germany, were at different times entertained as guests at Richmond Palace. Queen Elizabeth, and afterwards Charles the First, frequently resided here. During the

troubles of the civil war, the palace was taken out of royal hands; but at the Restoration, it was delivered to the queen mother, though in a very dilapidated state; it was shortly afterwards pulled down, and private houses erected on the site, the owners of which hold a lease from the Crown. The building in which some branches of the royal family have since resided is the *Lodge*, and not the palace properly so called.

There are two parks belonging to Richmond, the Old or Little, and the New or Great Park. The Old Park extends along the banks of the Thames nearly from Kew to Richmond, and comprises the extensive gardens, dairy-farm, and grazing-farm, so much esteemed by George the Third. The New, or Great Park, enclosed by Charles the First (the older park having belonged to the palace of the early kings) is situated southward of Richmond, extending from the hill to the Kingston road. It is eight miles in circumference, and comprises an area of more than two thousand acres

The elevated spot near the town, known as Richmond Hill, is the most attractive feature in the neighbourhood, on account of the view from its summit,—a view which embraces everything required to constitute a picturesque landscape, consisting of a fertile and richly-wooded plain, through which the Thames flows in a winding course, with its banks ornamented by numerous mansions and villas, and bounded by hills in the distance. Its proximity to the metropolis, combined with the attraction of scenery which it possesses, and the facility of conveyance both by land and water, cause it to be much resorted to.

Somewhat to the north-east of Richmond is the pretty little village of Kew, situated on the southern bank of the river, opposite Brentford. There is a royal palace and garden at Kew, which have been long celebrated for their beauty,—at least the garden. The palace is nominally occupied by the King of Hanover, as Duke of Cumberland. It was a private mansion until the time of King George the First, but it then came into the hands of the Crown. George the Second, when Prince of Wales, frequently resided there, and Thomson, the poet, who at that time inhabited a house at Richmond, was a frequent visitor at his table. The Princess Dowager of Wales, mother to King George the Third, ordered Sir William Chambers to lay out the grounds and form a conservatory and botanic garden. George the Third, who resided for a considerable time in a mansion since called the Nursery, in which most of the royal family were brought up, and in which his consort, Queen Charlotte, died, greatly improved and extended the gardens, which he united to those of Richmond, and began to erect a royal palace in the ancient style of English architecture, which, after remaining for several years in an unfinished state, was taken down in 1828 The royal gardens are tastefully laid out, and embellished with temples of the various orders of Grecian architecture, a Turkish mosque, and a Chinese pagoda of considerable elevation, from the summit of which a most extensive prospect is obtained of the scenery on the banks of the Thames, and of the surrounding country.

The botanic garden at Kew is in some respects distinct from the garden or pleasure-grounds attached to the palace. Its avowed purpose was to spread the knowledge of botany through the country, by collecting specimens of rare plants from all parts of the world, and supplying duplicate specimens to other gardens. It occupies about fifteen acres, of which a part is set off as an arboretum, for the reception of trees, and the remainder is occupied by stoves and greenhouses, borders of herbaceous plants, spaces left for the arrangement of greenhouse plants in the open air in summer, offices, yards, &c. The arboretum contains many very fine specimens of hardy exotic trees and shrubs, most of which are marked with labels, numbered, and referring to a private catalogue in the garden Among the stoves and greenhouses is one filled with magnificent specimens of New Holland plants, a second with small plants from the Cape of Good Hope and New Holland, a third with succulent plants, and several others with stove plants of different kinds. From the peculiar manner in which the botanic garden is, on the one hand, connected with the palace at Kew, and, on the other, dependant on the nation for support, it is not easy to say whether it is a public or a private establishment. About three or four years ago a Committee appointed by the Lords of the Treasury commissioned Dr. Lindley to inspect the garden, with a view of reporting how far it answered the purpose for which it appears to have been established, and for which a portion of the national revenue is every year allotted. In his Report, Dr. Lindley makes the following statement:—

After all the explanation that has been offered; after allowing full weight to the assertion that the botanical garden at Kew has always been a private establishment; admitting, moreover, that a larger number of plants has been given away than is generally supposed, and that in many cases applications for plants have been liberally complied with, which is undoubtedly the fact; it really does seem impossible to say that it has been conducted with that liberality or anxiety to promote the ends of science, and to render it useful to the country, which it is usual to meet with in similar institutions elsewhere.

We may here remark that the public are admitted to the botanic garden daily, during certain hours in the afternoon.

The church of Kew is situated on a pleasant grassy spot called the "Green," between the bridge and the entrance to the botanical garden. It was erected in the reign of Queen Anne; and in the church-yard attached to it lie the remains of two celebrated English painters of the last century, Gainsborough and Zoffany, the former of whom died in 1788, and the latter in 1810. The scenery of Kew was celebrated by Thomson in the following lines:—

> Fast by that shore where Thames' translucent stream
> Reflects new glories in his breast;
> Where splendid as the youthful poet's dream
> He forms a scene beyond Elysium blest;
> Where sculptured elegance and native grace
> Unite to stamp the beauties of the place;
> While sweetly blending, still are seen
> The wavy lawn, the sloping green,
> While novelty with cautious cunning
> Through every maze of fancy running
> From China borrows aid to deck the scene.

Let us now cross to the Middlesex side of the water Immediately opposite a point of the river midway between Richmond and Kew, is the pleasant village of Isleworth It consists of one principal street, filled with respectable and well-built houses. The environs are profusely rich in beautiful scenery, both banks of the river being adorned with elegant mansions and villas, with their annexed pleasure-grounds and shrubberies. A large portion of the land in the neighbourhood is cultivated by market-gardeners, who supply the London market; raspberries and strawberries are produced here in great beauty. It was at Isleworth that the insurgent barons held their head-quarters for a considerable time, in the reign of Henry the Third, under Simon de Montford earl of Leicester. There was a palace at Isleworth belonging to the Earl of Cornwall, the king's brother and during a contest between the king and the nobles this palace was razed to the ground by a riotous mob which proceeded from London for that purpose.

But by far the most interesting object near Isleworth is Sion House, the seat of the Duke of Northumberland The history of this house, and the manor belonging to it, carries us back to the year 1414, when a splendid monastery was founded at Twickenham, for sixty sisters, thirteen priests, four deacons, and eight lay brethren of the order of Saint Augustine. About

twenty years afterwards, the community removed to Isleworth, where a spacious edifice called the monastery of Sion was erected for their reception. At the dissolution of monasteries under Henry the Eighth, the site was granted to Sir Edward Seymour, afterwards Duke of Somerset, and Lord Protector, who built thereon the superb mansion since known as Sion House. After his fall it came into the hands of the Percys, earls of Northumberland.

The mansion, which underwent several alterations and additions in the seventeenth century, under Inigo Jones, is a spacious quadrangular and embattled structure, with towers at the angles. The entrance from the Western Road is through a handsome gateway, on each side of which is an open colonnade leading into a spacious lawn, ornamented with clusters of stately trees, and shelving to the margin of the Thames, which pursues its winding course along the border of the park and grounds. A noble flight of steps leads to the great hall, which is decorated with colossal statues, and a fine bronzed cast of the Dying Gladiator. The hall opens into a handsome vestibule, the floor of which is of scagliola marble, and the walls richly ornamented in relievo, and embellished with gilt trophies. Twelve columns of verd antique, supporting gilt statues, and sixteen pilasters of the same rare and costly material, impart an air of sumptuous magnificence to this part of the building. The gallery, which contains the library and museum, is one hundred and thirty-three feet in length, and is finished after the antique style, in stucco, of the most light and elegant design. The ceiling of this gallery is embellished with paintings, and ornamented with various devices, harmonizing with the general character of the whole; and immediately below it are paintings in medallions, exhibiting a series of portraits of the Earls of Northumberland, of the Percy and Seymour families. To describe the apartments of such a building would be a useless task; for it may well be supposed that a residence of one of the highest and most ancient of our nobility exhibits all that wealth and taste can accumulate in the way of decoration.

A little northward of Sion House is "dirty Brentford," a town which more than one poet has signalized in a rather uncomplimentary manner; for Gay speaks of

> Brentford, tedious town,
> For dirty streets, and white-legged chickens known.

And Thomson has spoken of

> Brentford town, or town of mud.

The town consists principally of one long street, upwards of a mile in length, which contains a few manufactories; but the chief source of employment to the inhabitants used formerly to be derived from the immense traffic along the Great Western Road, which passes through the town. But since the opening of the Great Western Railway, a considerable portion of this traffic has been removed from the high road, and Brentford has suffered in consequence. Brentford is considered the county town of Middlesex: as the elections for the county used to be held there, as are now the nominations of candidates. A neat stone bridge, erected in the year 1825, connects Brentford with Kew.

Though religion in its ordinary mode of exhibition commands but little respect, when it rises to the sublime, and is perceived to tincture and pervade the whole character, it seldom fails to draw forth the homage of mankind. The most hardened impiety and daring profligacy will find it difficult to despise the man who manifestly appears to walk with God, whose whole system of life is evidently influenced and directed by the power of the world to come. The ridicule cast on religious characters, is not always directed towards their religion, but more often perhaps to the little it performs, contrasted with the loftiness of its pretensions; a ridicule which derives its force from the very sublimity of the principles which the profession of piety assumes.—Robert Hall.

THE DEAD SWALLOW.

A bird—but 'tis a foolish thought—
To me doth seem as though it were
A little spirit of the air,
Too happy to be killed or caught;
And I could weep to see a thing,
So joyous in its volant mirth,
Dashed rudely down from sky to earth
With bleeding breast and broken wing.
Thou did'st not deem, an hour ago
Poor bird! when in yon azure height
Thy taper wings were twinkling bright,
Of lying here so cold and low!—
When morn hung glimmering o'er the plain,
Thy breast was wet with twilight dew—
But now, the life-blood oozing through
Hath dyed it with a darker stain;
And now, to skim the sunny lea,
And oft with sortive splash to break
The mirror of the broad blue lake—
Poor bird! is never more for thee!
Soon—when our northern summer dies—
Thy gathering clans will gaily flee,
To softer climes beyond the sea,
Through paths untracked by human eyes;
But thou! thy pilgrim toils are o'er—
So here I'll pile thy sylvan bier
With leaves which winds have scattered sere,
Poor bird! like thee to rise no more!——J. S. B.

I will mention three facts, illustrative of the vastly superior extent to which, in commercial countries, credit is necessarily employed as an instrument of exchange beyond *real* or *metallic* money. These are, first, that the entire commerce of Scotland, both foreign and domestic, is carried on without the practical use of a single gold piece. Secondly, that at the Bankers' Clearing-house in London, exchange transactions are *daily* settled to the extent of five millions sterling—on some days of *thirteen* millions—without the intervention of any coin whatever, and by the employment of a floating balance of only about £200,000 in Bank of England notes, themselves merely representing the *credit* of that establishment. Thirdly, that there is at every moment in existence in England an aggregate mass of transferable credit in the shape of book-debts, foreign and inland bills of exchange, mortgages, annuities, and other moneyed liabilities, including the great national debt itself, to an extent, as regards the whole empire, certainly of *several thousand millions* in value, the whole of which is strictly in employment as a medium of exchange; an instrument, that is, whereby one individual obtains possession, by consent, of the produce or property of another; while the amount of real or metallic currency circulating through the same countries does not, perhaps, exceed thirty millions, and might probably, as in Scotland, *be dispensed with altogether*, without in the least affecting the extent of this prodigious mass of transactions *on credit*.—Scrope's *Political Economy*.

When Europeans reached China three hundred years ago, they found all arts arrived at a degree of perfection which was quite astonishing, but which the Chinese have not since surpassed. Later still, they discovered vestiges of high state of knowledge, which had disappeared. The nation was industrious and mechanical; the greater number of scientific methods were traditionally preserved; but science itself no longer existed. This explains the kind of singular immobility in which was found the mind of the Chinese. In following the steps of their fathers, they had forgotten the reasons after which their fathers worked and acted. They made use of the form without the sense. They kept the instrument, but had no longer the power of modifying or improving it. Accordingly nothing was left to them but eternal imitation, all being dark and unknown to them beyond the beaten path. The source of knowledge was dried up, although the streams continued somehow or another to flow. In this manner China continued to subsist for ages, peaceable, industrious, rich, and happy. War and revolution were unknown to them. Might not some similitude be found between us and those barbarians? Some people allow light to be ravished from them, whilst others tread it out beneath their feet.—De Tocqueville.

ON CHESS. XXII.

THE KNIGHT'S MOVE.

WHILE studying the various powers of the pieces at chess, we cannot fail to be struck with the remarkable move of the knight: we have made it probable that the move of this piece originated in a compound of the shortest moves of the bishop and rook; but in *modern* chess this piece is the only one which is allowed to move over the heads of other pieces. The peculiar power which this privilege gives to the knight in actual play, it is not our purpose here to discuss: another interesting question will occupy our attention. A little consideration will show that the king, provided no other piece were on the board, could pass in succession to every one of the sixty-four squares, either with or without going twice over the same square; the queen could do the same, and so likewise could the rook. But the pawn, as it can only move straight forwards (except in capturing, and even then it moves obliquely forwards), cannot traverse the sixty-four squares; nor can the bishop do so, for one consequence of his diagonal move is to confine him to squares of one colour: consequently, he can traverse only thirty-two squares. The knight is yet remaining, and a question arises,—Can the knight traverse the sixty-four squares without stepping on any square twice? The solution of this question is one of the most remarkable circumstances in the history of chess; for as it was soon found that the problem could not be solved by mere inspection, the difficulty attending it drew the attention of ingenious persons towards the subject. Difficulties act upon scientific and ingenious minds rather as incentives than as discouragements; and this problem of the knight's move attracted the notice of first-rate mathematicians, who might not otherwise, perhaps, have paid any attention to chess and its associations. Among the distinguished men who have endeavoured to solve this problem are Euler, Bernouilli, Mairan, Demoivre, Montmort, Willis, and Dr. Roget; and we propose in the present chapter shortly to consider the results at which they arrived.

Most of the solutions of the problem (for we may here state at once that it *can* be solved,) have been arrived at by repeated trials, without proceeding in accordance with any particular law; and, we doubt not, that most of our readers could, with a little patience and ingenuity, carry the knight over the sixty-four squares, after many trials. But the object of such a man as Euler, whose profound mathematical talents led him to seek for principles in every department of study, was to elicit some general law by which the required object might be attained. He was successful in tracing the outline of a rule or law by which this might be accomplished; but the practical application of it was so difficult, that we doubt whether any one but himself has ever adopted it. The thorough mastery of the subject can only be attained when we are able to solve the problem in all its varieties, that is, to begin the circuit of the knight at any given square, and to end at any other given square.

In order to trace the power of the knight step by step, an anonymous writer, about twenty years ago, gave representations of imaginary chess-boards, rectangular, but containing a smaller number of squares than a real board; and he was able to demonstrate, that if the board contained 12, 20, 21, 24, 25, 28, 30, 32, 35, 36, 40, 42, 48, 49, or 56 squares, the knight could be carried over the whole of them, without going twice on the same square. These moves of the knight may be represented either by numerals, or by lines drawn on a diagram: the latter is the more perspicuous and pleasing of the two; and we will here give representations of the modes of proceeding in a few of these cases. Let us suppose there are three boards, containing respectively 5×5, 6×6, and 7×7 squares, the knight can be carried over them in the following manner:—

The angles represent the various positions of the knight; and the lines, his paths from one square to another. Beginning with fig. 1 (*a*), we see that if the tour commences at the left hand bottom corner, all the twenty-five squares in succession can be traversed without any one being covered twice; and the route terminates at the central square. In fig. 1 (*b*,) the tour commences at the right-hand bottom corner square, and, after extending over the thirty-six squares in succession, ends at the square next above the initial square. In fig. 1 (*c*,) the route is over all the forty-nine squares, and the terminal square is at a considerable distance from the initial one.

Fig. 1 (*a*).

Fig. 1 (*b*)

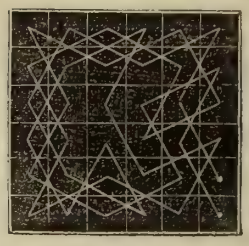
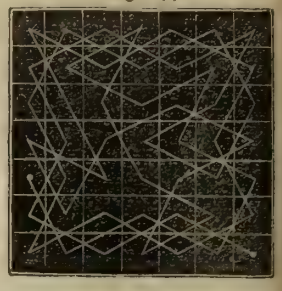


Fig. 1 (*c*).



These examples show that the knight may make the tour of a chess-board containing a smaller number of squares than the regular board; and there is little doubt that it might also be done on a board of more than sixty-four squares*. These imaginary boards have helped to devise systems whereby the problem can be solved on a real board.

We will now give three diagrams, representing three modes of solving the problem on a regular chess-board; and the reader would gain a clear idea of the subject by performing the same operation with a knight: he will do well to mark each square with a counter, as the knight steps on it, in order not to go twice on the same square. In the first diagram we shall commence at one corner and terminate at another: in the second, we shall cover all the thirty-two squares of one half of the board, before proceeding to the other half: in the third we shall give a *re-entering* route, that is, one in which the *last* square is situated at exactly a knight's move from the *first* square, so that the tour may be re-entered on, and performed in precisely the same way any number of times.

In fig. 2 (*a*,) the regular board of sixty-four squares is traversed by the knight, beginning at one corner, and ending at another; this, it will be seen, forms a figure having some degree of symmetry, but less so than one or two which we shall hereafter give. In fig. 2 (*b*,) the squares are separated into two portions, one of which is traversed before the knight crosses over to the other. Fig. 2 (*c*,) possesses this distinguishing property, that we can commence the tour on *any* square: in drawing the diagram, we commenced at the right-hand bottom corner, and ended at the knight's third square; but any other initial square might have been selected, because the route is an interminable one, re-entering into itself.

Many other ingenious modes have been devised, some of which we shall notice hereafter; but no satisfactory attempt to give a *general* solution to the problem had been made public, until the month of April, 1840, when Dr. Roget communicated a short but admirable paper to the *Philosophical Magazine*, unfolding a method by which the problem could be solved in any

* Ciccolini has solved the problem of the knight's move over a board of one hundred squares, as well as over a circular board of sixty-four squares.

Fig. 2 (*a*).

Fig. 2 (*b*).

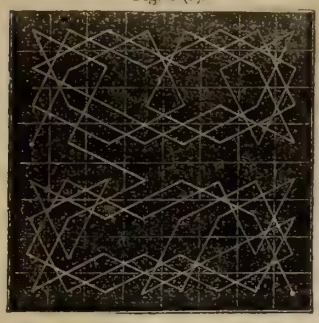
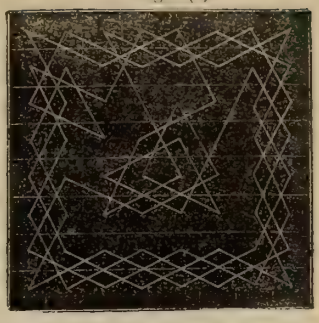


Fig. 2 (*c*).



form, that is, by beginning at any given square, and terminating at any other given square of the opposite colour*. We will now attempt to explain this ingenious method.

In the first place, the reader must conceive the board to be divided into four quarters, of sixteen squares each, by two lines passing through the middle at right angles to each other, and parallel to the edges of the board. Then selecting any quarter, we shall find that the sixteen squares may be divided into four systems, each of which consists of four regular knight's moves. These systems are shaped, two as perfect squares, and two similar to the rhombus, lozenge, or diamond (in future we shall use the last of the three names). Thus in fig. 3 the sixteen squares, constituting one quarter, are divided into four systems, represented by these four kinds of lines, — - — - — forming two squares and two diamonds; and it will be seen that the four sides forming each of these figures, are regular knight's moves.

In the next place, it will be found, that, after passing over the four squares of one system in one quarter of the board, we can pass to the same system in an adjoining quarter; and, after traversing that system, can pass on to another quarter, and so on; thus, in sixteen moves, we can traverse the sixteen squares forming one system of the whole board. We will demonstrate this as to *two* of the systems, and the reader will then readily admit its truth as to the other two. In fig. 4 (*a*,) we traverse all the sixteen squares of the system ————; and in fig. 4 (*b*,) all those of the system ..... The diamonds in the former case, and the squares in the latter, *appear* to be incomplete, because only three out of the four sides are represented; but this necessarily results from the conditions of the problem, for we must not go twice on the same square, which we inevitably should do if we drew the four sides of each figure: the knight, however, steps on the squares representing the *angles* of each figure, and this is sufficient to make our description correct.

Fig. 3.

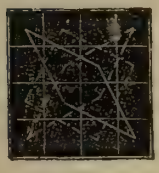


Fig. 4 (*a*).

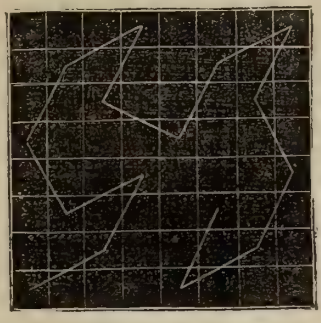
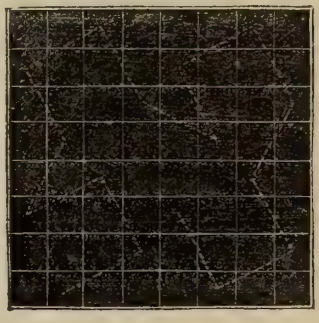


Fig. 4 (*b*)



Now the question which arises, is this:—Can the knight after having traversed the sixteen squares of one system, pass on to another system? He can do so under certain conditions: he can pass from a square to a diamond system, or from a diamond to a square system; but not from a diamond to a diamond, or from a square to a square. Moreover, the sixteenth, or last square of each system ought to be as near the *centre* of the board as possible, since, if it be at or near a corner, the passage to another system may be difficult, or even impossible. If we examine fig. 4 (*a*,) we shall see that, beginning at the corner square, the terminal one of that system is such as to allow the knight to step on to either of the square systems, there being a choice of four moves, of which two belong to each of the square systems: similarly, from the terminal square in fig. 4 (*b*,) we can select four squares to move to, of which two belong to each of the diamond systems.

If the necessary precautions be attended to, it will now be evident that the problem may be solved by the method under consideration. Let the initial square, for example, be in one corner: it will then belong to a diamond system. After traversing the sixteen squares of that system, the knight passes to a square system, which is succeeded by the other diamond, and this by the other square, when the tour terminates. A little practice will give the necessary facility, provided the player attends to these two points:—1st, to complete the sixteen squares of one system before he passes to another: 2nd, to terminate each system rather towards the centre o the board than towards one corner. Generally speaking, he may pass round either to the right or to the left *ad libitum*, and may choose any one of the sixty-four squares he pleases, as the initial square.

In our next article we will apply this method to several remarkable forms of the problem under consideration.

* Since the knight at each move, goes to a square of a different colour from that which he before occupied, all the *odd* squares are of the same colour as the initial square, and all the *even* squares must be of the opposite colour; consequently the sixty-fourth square, which is the terminal one, must always be of the opposite colour to the initial one.

We say of a false man, Trust him not, he will deceive you; we say concerning a weak and broken staff, Lean not on it, for it will deceive you. The man deceives because he is false, the staff because it is weak, yet our own heart is both. The heart of man hath not strength to think one good thought of itself; it cannot command its own attention to a prayer ten lines long, and no wonder then that in secret it should grow weary of a holy religion, which consists of so many parts as to make the business of a whole life.—JEREMY TAYLOR.

THE CASTING OF STATUES IN BRONZE.

THE preparation of statues from brass, bronze, or other metal, is a process requiring an intimate union of that refined and elevated taste which distinguishes the sculptor, with the knowledge of the metals and their qualities so indispensable to the founder. We will endeavour to give a popular description of these operations.

In the first place, it must be observed that all bronze statues are hollow, consisting of a mere shell, delicately worked on the exterior, and more rudely fashioned in the interior. To produce this shell a complicated series of operations are necessary, comprising alternate modellings and castings. The nucleus with which the artist commences his work is an inner mould or core, composed of potter's clay, plaster, and brick-dust, mixed with water to a working consistence; this clay is worked upon a slight iron frame or skeleton, and fashioned into a rude resemblance of the figure about to be cast, but smaller in all its dimensions. The rough core, thus formed, is covered with wax of such thickness, that the dimensions of the figure may be in excess of that intended to be executed: and the sculptor proceeds to sculpture this waxen surface with all the delicacy and care which he would bestow upon a marble statue; working out his entire design on the wax. This part of the process being completed, little tubes of wax are fixed perpendicularly to the surface, all over the figure, for a purpose which will be presently explained; and the whole of the wax is then coated or covered with a layer termed the shell. This shell consists of strata, formed of different materials; the first is a composition of clay and old white crucibles well ground and sifted, and mixed with water to a creamy consistence; this is laid on with a pencil, in the manner of paint, seven or eight successive coats being given, and the surface dried after each. The next stratum consists of the same substance together with a little earth to give it more solidity, and the third stratum is still more solid. The soft or semi-fluid shell, thus laid on, takes the impression of the different parts, which it afterwards imparts to the metal. The shell is now secured by several bandages of iron wound round it, secured to an iron ring at the top, and to a grating at bottom, on which the model had been erected.

Thus far all the operations may be classed under the head of modelling; but the next process is a very curious one, viz., to melt out the wax from between the clay core and the earthen shell, and thus leave a vacuity afterwards to be filled up with metal. The grating on which the model has been built up is placed at the bottom of a square hole made in the ground. This hole is lined with free-stone or brick; and beneath the grating is a smaller hole provided with a furnace. When the figure is complete, a moderate fire is kindled in the small furnace just alluded to; and the heat, being confined and equalized by boards placed over the hole, speedily melts the layer of wax between the core and the shell, and causes it to run down from all parts of the figure, out of pipes introduced for that purpose at the foot of the mould. There must now be a vacancy everywhere where the wax had been, and this vacancy is carefully preserved.

The hole in which the figure is placed is then entirely filled up with bricks; and the fire in the furnace is continued until the whole contents of the furnace, mould as well as bricks, are thoroughly red-hot. The furnace is then extinguished; and when the contents are cold, the bricks are removed, and the space is filled up by earth rammed in closely round the figure.

All is now ready for the introduction of the melted metal, and we will therefore proceed to speak on that point. Sometimes brass is the metal of which statues are formed; but, generally speaking, the metal is an alloy of copper and tin. In every case copper is one of the component metals, for brass is a compound of copper and zinc; while bronze, or statuary metal, as well as bell-metal and gun-metal, are compounds of copper and tin. The chief difference between the last-named three compound metals is in the proportion between the copper and the tin. Generally speaking, bronze contains a larger proportion of copper than of tin; but most statuaries have particular combinations which they prefer. The furnace in which the bronze is melted somewhat resembles an oven, and is provided with three apertures, one to put in the wood, another for a vent, and a third to run the metal out at. From this last-mentioned aperture, which is kept closed while the metal is in fusion, a little tube or canal extends, by which the melted metal is conveyed to a large earthen basin situated over the mould, and from this basin spring a number of little jets, for conveying the metal to different parts of the figure. All the jets are terminated or stopped with plugs, which are kept close until sufficient metal is contained in the basin to supply the whole figure; they are then speedily removed by iron rods attached to them, and the melted metal rushes into, and fills up all the cavities which had been previously occupied by the wax.

When all is cold, the earth which had been pressed into the pit is removed, the shell or crust is broken off from the metal, and the clay core is removed from within it; leaving a thin metallic figure, whose external surface represents the object intended, but needs to pass through the hands of the sculptor, who repairs any defects.

Where the statue is very large, the quantity of metal necessary for this process is considerable, and constitutes a formidable item in the expense. Hence various plans have been suggested for producing very thin statues, in order to effect a saving in the quantity of metal employed. One such method, employed to a considerable extent on the Continent, is the following. The figure is first made in plaster of Paris, of the exact shape and dimensions it is intended to be when completed in metal, and placed in an erect position on a firm platform. It is then covered all over by a shell, composed of a number of pieces fitted very correctly together, so that they may be removed and built up in another situation, forming in the interior a figure exactly resembling the original one in plaster. The work is commenced at the bottom, by covering with strong sand such part as is intended to form one block of the shell to about an inch or an inch and a half in thickness, to which is added about one foot in thickness of plaster of Paris, which unites with the sand, and forms one block: the remaining part of the figure is completed up to this height all round, in a similar manner, by blocks, of which the number and arrangement must be such, that they may be removed when the shell is complete, without disturbing the sand. Another course is now commenced and completed in the same way, and the work is thus continued until the whole figure is completely surrounded by the shell. During the progress of the work, tubes are cast in with the plaster, for the admission of the metal, and for the escape of the air, as in the common method; and iron rings are let into the plaster for the convenience of raising and removing the blocks. When the shell is complete, it is taken to pieces and removed to the casting-pit, where it is carefully rebuilt, and the interior filled up with the material to form the core. It is now a second time taken to pieces, leaving the core of the exact shape and dimensions of the original figure, from which is scraped off such a quantity of material as will give the necessary thickness of metal to each part of the figure. The shell is then again put together in its original position, and will, therefore, leave a space between the interior of it and the core, exactly equal to the thickness of material which has been removed. Nothing now remains to be done, but drying the mould, and pouring on the metal, which operations are performed in the ordinary way.—This method effects a great saving of metal; but it at the same time requires much care and dexterity.

RURAL SPORTS FOR THE MONTHS
NOVEMBER.

MYSTERIOUS POWER! which guides by night
Through the dark wood the illumined sight;
Which prompts them by the unerring smell,
The appointed prey's abode to tell,
Bore with long bill the investing mould,
And feel, and from the secret hold
Dislodge the reptile spoil! But who
Can look Creation's volume through,
And not fresh proofs, at every turn,
Of the CREATOR'S mind discern:
The end to which his actions tend;
The means adapted to the end;
The reasoning thought: the effective skill;
And, ruling all, the Almighty will?

BISHOP MANT'S *British Months.*

NOVEMBER introduces the commencement of a sport that must be practised in bleak and marshy districts by those who are its advocates. The shooting of woodcocks and snipes demands on the part of the sportsman a power of resisting the effects of the wet and cold season, and of bearing the inconveniences resulting from the nature of the ground. Of snipe-shooting, in particular, it has been said, that the man who follows it should be possessed of a strong constitution, not liable to catch cold, and should have all the fortitude as well as exertion of a water spaniel. To succeed in his sport, he must be habitually inured to wet, dirt, and difficulty, and not be daunted by the most inclement weather. It appears strange, to those who have but little sympathy with the pursuits of sportsmen, that, at a season of the year, when even the most favoured spots of our island present few attractions to out-door employments, and when, except for the transaction of necessary duties, we might naturally be willing to shelter ourselves in our comfortable homes from the cheerless and foggy atmosphere without,—that, at this uninviting season, the members of the sporting community should find their chief delight in seeking out just the most dreary, and wet, and chilling localities in our own and the sister island, and there, in defiance of bog, marsh, or half-frozen pool, should follow, with so much enthusiasm, the task of destroying our winter visitants.

Woodcocks are fond of wild, marshy copses, where, near the pools, which are frequent in such spots, they can bore the ground with ease, and find abundance of food. Solitude, shelter, and humidity, are essentials with these birds; and, therefore, they shift their quarters as cultivation changes the character of a country. Devonshire, Dorsetshire, Cornwall, and Sussex, are the favourite English localities for these birds; and both North and South Wales are celebrated for the sport they afford.

The Woodcock (*Scolopax rusticola*) is placed at the head of the Snipes proper, and, according to Bewick, is fourteen inches in length, twenty-six in breadth, and weighs about twelve ounces. The shape of the head is remarkable, being in profile, rather triangular than round, and extending over the base of the bill in all directions, so that, in whatever way the bill may work in the ground, the weight of the head gives force to its movements, as it penetrates the oozy soil in search of food. The bill itself is, however, the distinguishing mark of this family of birds. The upper part, or mandible, is three inches long, and projects beyond the lower one, ending in a kind of knob, which is susceptible of the finest feeling. By means of this curious organ, the woodcock, in common with other birds of the same genus, is enabled to distinguish the small worms, &c., abounding in soft moist grounds, and then to extract them with its sharp-pointed tongue. With the bill also it explores among fallen leaves, and other rubbish, in search of insects which shelter underneath. Three varieties of woodcocks, common in Britain, are noticed by Dr. Latham. The head of the first variety is of a pale red, the body white, and the wings brown; the second is of a dun, or rather cream colour; and the third of a pure white. There are many other variations in the plumage of these birds.

The grand resort of woodcocks during summer, is understood to be the marshy woods to the north of the Baltic, though this species is generally extended throughout all the climates, both hot and cold, of the Old Continent, and is also found in both North and South America. Everywhere it is a voyaging bird, though its migrations are mostly from the mountains to the plains, and from the plains to the mountains, and not from one distant country to another. It visits this country at the same time with the Red-wing; and is supposed to come from Sweden. The most numerous tribes arrive in November and December, and as the Alps and Pyrenees are stated to be favourite localities with woodcocks in summer, it is probable that some of our winter visitants arrive from thence. The arrival of these birds is hastened or retarded according to the weather: they appear to wait a favourable gale to waft them towards our shores without much exertion; for, that they are scarcely able to endure their flight is evident from the fatigued condition in which they often reach us. Compelled to alight on the first spot which offers itself, they have been not unfrequently picked up in the open streets of the towns on the coast, being too tired to make their escape. They are in this case usually found to be extremely lean and exhausted, which is the more remarkable, as other birds arriving at the same time, and from an equal distance, show little symptoms of fatigue. It appears that this emaciated condition cannot be attributed solely to exhaustion on account of their long flight; since those which are killed in Norway before the migration has taken place, are already in a poor condition, and infested with vermin. It is therefore probable that their fatigue is the consequence of their debilitated state, and not the cause of it. At first the woodcocks arrive one by one, or two by two, but later in the season they appear in flights, according as the wind serves their purpose. They are often descried for the first time in the evening of a misty day, and are found to alight indifferently in woods, hedges, heaths, &c. They are very shy and retired in their habits, and rarely take wing during the day, unless disturbed. At close of day they quit the covers, and wander over the meadows in search of moist places, where they bore for food, retiring to their hiding places again at morning dawn. The eyes of these birds are large and convex, so that they cannot see well except by twilight. A stronger light appears painful to them, and it is probably owing to the weakness of their visual organs, that they have acquired a character for stupidity. In their mode of feeding the eye is not called into use, and they depend on the exquisite sense of feeling in their long bill, aided perhaps by acuteness of smell. As in the duck tribe, the nerves of the bill are extremely numerous, and highly sensible of discrimination by the touch, so that when plunged into the soft earth, not a worm that is within reach can escape.

Although the woodcock, in the great majority of its numbers, is a bird of passage in Britain, yet nests and broods have been discovered both in England and Scotland, so that it has of late been classed among our native birds. Their nests are composed of leaves, or dry plants, heaped on the ground, against the trunk of some tree, or under a thick root. The eggs are dull yellowish white, blotched with reddish brown, and are about four or five in number. They are rather larger than those of the common pigeon, and said to be very good eating. The young birds are voracious feeders; they quit the nest when they are only covered with a soft down, and even begin to fly before they have any other feathers than those of the wings. The number of woodcocks in our islands is generally admitted to be on the decrease, and Mr. Blaine, in noticing the circumstance, complains that these birds are unmercifully pursued, not, as formerly,

by one gunner from every village, two or three from every town, and twenty or thirty from every city, of which number not more than one out of five was a ready shot, but by the far more numerous and practised shooters, who in our day have learned to handle the gun. "The common principles of humanity," says our author, "should prevent a war of utter extermination of a race that comes to seek food and protection from us."

The Common Snipe (*Scolopax gallinago*) is also provincially called *snite*, or *heather-bleater*. Though agreeing very much in external appearance with the woodcock, it differs from it in natural habits, and the place which the woodcock chooses as cover during the day-time, and for the concealment of its nest in the breeding season, is one which would not suit the wants of the snipe. The latter bird prefers the open marshy grounds, and seeks no other concealment than is afforded by tufts of heath and grass. Snipes are still more generally diffused than woodcocks, and there is no portion of the world in which some of them have not been found. They are so numerous in the rice-grounds of Egypt, soon after the crops have been gathered in, that it is not uncommon for a person to shoot a basket-full in a day. The soil is, however, so completely impregnated with water, that the sportsman finds it fatiguing work to traverse the fields, and sinks at every step he takes, sometimes above his knees. These birds are common at the Cape of Good Hope, and in the islands of Ceylon and Japan. They greatly abound in some parts of Ireland, so that forty-three brace have been killed by one gentleman in six hours. The common snipe weighs about four ounces; it is near twelve inches in length, of which the bill occupies three inches. The head is black, with a light rufous stripe down the middle, and others surrounding the eyes; the throat is white; the cheeks, neck, and upper breast mottled with black and rust-coloured patches; the wings, tail-coverts, and back, are barred with the same; the lower breast and belly, white; the legs are in some cases of a dusky lead-colour, in others green.

Autumn is the season for the arrival of this bird in most of the southern and western countries of Europe. It is then met with in meadows, marshes, bogs, and along the banks of streams and rivers. In walking it carries its head erect, without either hopping or fluttering, and gives it a horizontal movement, while the tail moves up and down. On taking flight, it rises so high in the air, as often to be heard after it is lost sight of. The bill of the snipe is no less remarkable than that of the woodcock, being adapted for boring in the soft sludgy ground, where worms abound. It is very interesting to remark the exact adaptation of form in different birds to their peculiar modes of life. In dabbling birds, which sift and turn up the mud of shallow streams with their flat bills, we find the boat-shaped body, the web-foot, and all the necessary adaptations for swimming and diving; but the snipes always have their feet on the ground while they feed, and we find those feet, not indeed so well adapted for walking on elastic vegetation, inasmuch as they are destitute of the long hind toe, which is so essential for that purpose, but yet remarkably fitted for walking on the surface of soft mud, and in those moist and marshy places which form their favourite localities, while they are not in any way adapted for swimming or diving.

In spring, when the low grounds begin to get dry, snipes make their way to more northerly situations, or to those upland regions where the winter lasts longer, and the surface of the ground continues humid. Some few, however, remain in most parts of the country during summer; and in the north and north-west of Britain and in the bogs of Ireland they are numerous. The nest of the snipe is always in close concealment, among the thickest herbage. It is rudely constructed of vegetable fibres, sometimes lined with withered leaves. The eggs are four in number, arranged in the form of a cross, with the small ends meeting in the centre: they are of a pale greenish grey, with brown spots. The young leave the nest as soon as they escape from the shell, and the plumage which they rapidly acquire is at first darker than that of the old birds. Their feet are so well developed that they are soon able to go in quest of their own food. The bill is, however, short, and does not attain its full length for two or three months, nor its proper consistency till the following spring. Snipes lie very close in the herbage at all times, and are with difficulty raised to the wing. Their flight has often so many turnings and windings as to make them difficult game. Birds of prey also find the snipe a troublesome and dexterous object of pursuit. In the first place, they have to beat a long time before they can make it take the wing, and then, if the snipe gets the least advantage, it doubles so often and so rapidly that if the hawk is not altogether thrown out, the chase is often a lengthened one.

The snipe usually grows very fat both in Europe and North America, and after the early frosts, its flesh acquires a fine and delicate flavour. It is cooked like the woodcock without extracting the entrails, and is everywhere esteemed as an exquisite game. The fat of the snipe is particularly delicate, and is not apt to cloy or to disagree with those who eat it. Snipes are more numerous than woodcocks in this country, and in the fenny districts are especially abundant. In frosty or snowy weather, these birds resort in numbers to warm springs, and other places where the ground remains unfrozen, these being the only situations in which they are able to procure food. Snipe-shooting is met with in the greatest perfection in Ireland; in Wales, also, both North and South, snipes are plentiful, whether in the mountains or in the more level districts. The mossy lands of Scotland, and the vicinity of the lochs, afford these birds in considerable numbers; while in England, the counties of Cambridge, Lincoln, and Northampton, and the Essex marshes, are their favourite resorts.

Recluse in Cumbria's humid fells,
Or Scotia's dank and rushy dells,
Or where o'er vale or mountain's head
Green Erin's heathery swamps are spread;
You'll hear remote the feeble pipe
Shrill sounding of the wakeful Snipe,
And catch, receding from the view
His spots of black and rusty hue;
As, starting from his reedy fen,
He flies abrupt the approach of men,
And, with quick wing and zig-zag flight,
Dazzles the unpractised fowler's sight.

British Months.

THE SNIPE

LONDON:
JOHN WILLIAM PARKER, WEST STRAND.
Published in Weekly Numbers, price One Penny, and in Monthly Parts, price Sixpence,
Sold by all Booksellers and Newsvenders in the Kingdom.

THE

Saturday Magazine.

No. 604. SUPPLEMENT, NOVEMBER, 1841. { PRICE ONE PENNY.

A BRIEF HISTORY OF THE FINE ARTS. No III.

VICTORY; FROM A ROMAN PAINTING FOUND AT POMPEII.

A BRIEF HISTORY OF THE FINE ARTS. No. III.

ON THE KNOWLEDGE OF PAINTING POSSESSED BY THE ANCIENTS.

The softer canvass oft reposed the soul.
There gaily broke the sun-illumined cloud;
The lessening prospect, and the mountain blue,
Vanished in air; the precipice frowned, dire.
White, down the rock, the rushing torrent dashed;
The sun shone, trembling, o'er the distant main;
The tempest foamed, immense; the driving storm
Saddened the skies, and, from the doubling gloom,
On the scathed oak the ragged lightning fell:
In closing shades, and where the current strays,
With Peace, and Love, and innocence around,
Piped the lone shepherd to his feeding flock:
Round happy parents smiled their younger selves;
And friends conversed by death divided long.—THOMSON.

INTRODUCTION.

HAVING traced in our former Supplement the history of the art of Sculpture from the earliest periods to which our knowledge extends down to the present time, we now commence a similar undertaking with respect to the sister art of Painting, which being more extensive in the range of subjects which it presents to our imagination, depending upon illusion for some of its more striking effects, and employing principles abstractedly unreal, may be considered as presenting a class of difficulties to the artist, altogether different from those attending the practice of Sculpture, and in many respects more formidable and less likely to be overcome. Both arts, however, have the same basis, *i.e.*, FORM; and that basis is made the great and fundamental law of practice in all well regulated plans of study.

That painting is an art of extreme antiquity, there cannot be the slightest doubt; but to assign the country where it was first practised, or the circumstances attending its origin, is beyond the power of the historian. It has been justly observed that "the origin of any art, science, or discovery, is not so much owing to the particular accident which happened to the individual concerned, as to the intellectual adaptation of that individual to receive impressions of a peculiar nature, from the particular circumstance which occurred. Thus, whether music was invented by the man who listening to the sound of an anvil, instantly composed notes; or whether painting was discovered by the girl who watched the shadow of her lover, as he sat silent at the prospect of parting, and traced it on the wall as a memento of their mutual affection; whether it originated with Philocles in Egypt or Cleanthes in Corinth, or long before Egypt or Greece were habitable, the *principle* is the same. Without an inherent susceptibility to the impressions of sound, in preference to all other impressions, in the man, or an inherent susceptibility to the impressions of form equally intense in the girl, the intellectual faculties of either would never have been excited to compose notes, or to define figures. The art originated with the first man who was born with such acute sensibility to the beauty of form, colour, light, and shadow, as to be compelled to convey his thoughts by positive imitation."

SECTION I. EARLIEST RECORDS OF THE ART.

The cultivation of the arts is noticed in Scripture history as first appearing in the family of Cain; and within four centuries after the Flood we find that images of wood, stone, and metal were formed for idolatrous purposes. It is an ancient tradition that Terah, the father of Abraham, was a maker of images, but even at a period preceding by more than a century the call of Abraham, Greek and Egyptian tradition tells us of a colony planted at Sicyon by an Egyptian leader named *Ægialeus*, who brought with him the knowledge of sculpture and painting, and founded the earliest and purest school of Greek art. We find that the walls of Babylon were adorned with paintings of different species of animals, hunting expeditions, combats, &c. Semiramis was represented on horseback striking a leopard with a dart, and Ninus, her husband, wounding a lion. Allusion to this custom of the Babylonians of decorating their walls with paintings is found in the Sacred Writings. The prophet Ezekiel reproving the Jews for their idolatry says, "I went in, and saw, and behold every form of creeping things, and abominable beasts, and all the idols of the house of Israel, *pourtrayed* upon the wall round about." And in another place the same prophet adds, "She saw men pourtrayed upon the wall, the images of the Chaldeans pourtrayed in vermilion, girded with girdles upon their loins, exceeding in dyed attire upon their heads, all of them princes to look to, after the manner of the *Babylonians of Chaldea*." Ezek. xxiii. 14, 15.

The key which has at length been discovered to the deciphering of Egyptian hieroglyphics, promises to open to us much of the history of ancient art. It is now little doubted that although painting and sculpture existed in Egypt, and were probably at their highest condition, eighteen centuries before the Christian era, yet, at a still earlier period, even in the ages of which we have hitherto had nothing more than a fabulous account, the arts were known in the ancient kingdom of Ethiopia. The existence and the exploits of Ethiopian monarchs are now found commemorated on the existing ruins of their cities, and correspond in a remarkable manner with the Jewish and Greek historians; and it is considered probable that the course of civilization descended from Ethiopia to Egypt. In the Bristol Museum may be seen some fine specimens of Ethiopian skill, in two nobly executed lions, on the shoulders of one of which is the name of Amenoph III., called Memnon by Greek historians. These were found by Lord Prudhoe among the remains of a magnificent city, situated eighty miles above Dongola, and supposed to have been the capital of Tirhakah mentioned in the Scriptures. The walls and temples of Thebes also, were decorated with paintings and sculpture, as early as the nineteenth century before Christ; and it is a remarkable fact that the succeeding efforts of Egyptian art never exceeded in merit the specimens which remain of those very early times.

To account for this circumstance it is conjectured that at the early period of which we are speaking the artists were allowed to follow their own feelings, and to commemorate in any way they liked, the actions of their employers, whereas it is well known that in later times, the arts in general were practised entirely in subserviency to the priesthood, and as by law every child was compelled to follow the profession of his father it is not to be wondered at that painting and sculpture degenerated, rather than progressed, among this singular people, and that in the time of the Ptolemies the former art was little better than an illuminated hieroglyphic. "The effect that the use of hiefoglyphic painting, whether more or less near to writing, had upon the art of painting itself, was most disastrous. Those who were permitted to paint at all, were bound to make no improvement. The art was jealously kept for the adornment of hideous mummy cases, and sepulchral chambers, where the nearest approaches to what is properly painting were a sort of portraits, drawn upon the inner coffins, which were composed of folds of linen, prepared with a chalk ground, or basso relievos either coloured themselves, or imitated in flat colours upon the walls."—CALLCOTT.

The Egyptians can scarcely be said to have possessed the art of painting. The coloured subjects found on the walls of tombs and caverns are many of them merely coloured basso relievos: the outline was drawn in red chalk and corrected; it was then cut out by the sculptor, and coloured by the painter in simple unbroken colours. Thus there are blue gods, yellow goddesses, and red men, with green and black draperies. The pigments were for the most part ochres; but the blues and greens appear to have been prepared from copper; the black was lamp-black, and the white a very fine lime. This distant approach to the art of painting seems to have been the mere result of a desire to distinguish the personages in their groups and to represent the colour of the nations, whether white, tawny, or black, with whom they were at warfare, or from whom they received homage. There is nothing in these groups deserving the name of a picture, since there is no knowledge of light and shadow, and no idea of either lineal or aërial perspective. Neither have we any record of an Egyptian painter in the annals of the art. Of the adornment of the mummy cases above referred to we give some further notice, for the benefit of such of our readers as may not have had an opportunity of examining them for themselves in the collection of the British Museum. The outer or wooden

case of a mummy is made, it is believed, of sycamore wood, sometimes cut out of a solid piece, sometimes composed of several pieces joined together by wooden pegs. It is generally of considerable thickness, and is coated on the outside with distemper colour, on which various emblematical devices are painted in a very inferior manner. The rude representation of the face which appears on the upper part, is sometimes painted red to denote that the body inclosed within is that of a male, sometimes yellow, for the female, and occasionally it is gilded. As soon as the upper portion of the mummy case is removed, the second or inner case appears. This is not composed of wood, but of at least ten or a dozen layers of linen firmly cemented together by a strong glue. This case is said to be originally formed on a rude model of the size and shape of the swathed body, and when the cement has become sufficiently dry, the model is taken away and the body introduced, the aperture being afterwards closed by an ingenious lacing, and the seam covered with a strip of cloth, glued or cemented over it. It is on this inner case that the largest portion of ornament is bestowed. "I have seen some," says a gentleman who had assisted in the opening of several mummies, "which must have occupied many days, perhaps many weeks, in the very elaborate outlining and colouring in water-colour or distemper; and finally varnishing or fixing the subject of this hieroglyph or allegory. The ground of this painting is of very fine and pure white, resembling stucco. The parts that are drawn on, and apparently outlined with a pen and then coloured, are the only parts that are afterwards varnished:—the blank parts of the white ground remain unvarnished, except where the varnish-brush has occasionally slipped beyond the outline, and there the white has become yellow. This white ground may be disturbed by a wetted finger, which is not the case with the varnished parts. Their varnish must have been of excellent quality, as it retains its transparency and gloss in a most extraordinary degree; in some instances appearing as if executed only a few days."

From all that can be gathered of Egyptian art, it does not appear that painting ever flourished in that country, or that other nations were much indebted to Egypt for their knowledge of the art. The only minute account we have of any peculiar works executed by tribes who may be supposed to have gained their knowledge of the arts from Egypt is that contained in the books of Moses; and this leads us to the consideration of the state of art among the Hebrews.

Section II. Notices of Hebrew Art.

Of the knowledge of the arts possessed by the Hebrew nation after their deliverance from the bondage of Egypt we have the most interesting intimations in the history of that people, and in the directions given them for the making of the ark and the tabernacle. "Moreover, thou shalt make the tabernacle with ten curtains of fine twined linen, and blue, and purple, and scarlet: with cherubims of cunning work shalt thou make them." (Exod. xxvi. 1.) "And the Lord spake unto Moses, saying, See, I have called by name Bezaleel the son of Uri, the son of Hur, of the tribe of Judah; and I have filled him with the spirit of God, in wisdom, and in understanding, and in knowledge, and in all manner of workmanship, to devise cunning works, to work in gold, and in silver, and in brass, and in cutting of stones, to set them, and in carving of timber, to work in all manner of workmanship." (Exod. xxxi. 1—5.) We find that in the preparation of the tabernacle they must have understood the weaving of fine linen; the preparing and dyeing of skins; the making of scarlet, red, blue, and purple dyes; the various modes of carving in wood; the casting and chiselling of metals, and the engraving of precious stones, and setting them according to the jeweller's art. Still there is no allusion made to the existence of painting as one of the fine arts among the Hebrews, and no proof that it was cultivated among them as such. This seems the more extraordinary, as it is hardly possible to suppose a people working in stone, silver, gold, and timber, and making rich embroidery on curtains and borders of garments, with various other clever devices, and to be destitute of the knowledge of painting. Indeed, there is every reason to believe that coloured designs must have been made to serve as patterns for the working of their tapestry, and it is difficult to assign any other reason for the neglect of the art than that which has been assigned by an eminent authority, *i. e.*, that the representation of any object by painting was not permitted to the Hebrews. This view of the subject seems countenanced by a passage in the book of Numbers, where pictures are named among the objects of the idolatrous worship of the Canaanites: "And the Lord spake unto Moses in the plains of Moab, by Jordan near Jericho, saying, Speak unto the children of Israel and say unto them, When ye are passed over Jordan, into the land of Canaan; then ye shall drive out all the inhabitants of the land from before you, and *destroy all their pictures*, and destroy all their molten images, and quite pluck down all their high places." (Numbers xxxiii. 50—52.)

Section III. Painting among the Phœnicians, Persians, Chinese, and Japanese.

With respect to the art of painting among the Phœnicians, Persians, and other Eastern nations, we are assured that it has been from the earliest ages, vile and wretched in the extreme. The Chinese, who have remained in nearly the same state, as to civilization, for a period of several thousand years, have from very early times made use of written signs for the purpose of retaining the memory of particular events, and among the elementary characters composing by their endless combinations the language of that people, it is not difficult to trace the rude forms of men and animals, houses, trees, hills, &c. The art, however, among them remained at a very low point, and their religion was not calculated to call forth their genius. They seem, until within a very recent period, to have contented themselves with only so much knowledge of painting as might enable them to decorate their beautiful porcelain, and their lacquered wares. Of the degree of dexterity to which they had attained Mrs. Callcott thus speaks:—"The Chinese had certainly attained to great manual dexterity, and the power of copying servilely whatever inanimate subjects were before them; and they had discovered the method of extracting colours from metallic substances, capable of bearing the furnace, as well as those of more obvious use in the chalks and earths of their country; besides some of the finest varnishes in existence. We ought not to marvel that they did not attain, in their painting, to common, much less to ideal beauty, when we reflect on the general character of form in their own nation or their Tartar conquerors, which is very far below that of the Indians and their western neighbours. And we have, perhaps, no right to expect better human shapes than that of the portly mandarin and his crimp-footed lady upon their plates and dishes. But their animals, whether painted, modelled in clay, or cast in metal, are less distorted than their men: and as to perspective, linear or aërial, they seem to have no sense of either. In flowers and birds, their pencilling is delicate, and often true to admiration; but even in these objects, except in treatises on botany or ornithology, their peculiar taste breaks out in monstrous combinations of leaves and flowers that never grew in the same soil, and of beaks and wings that were never hatched in the same nest." Within a recent period a change has taken place in Chinese art, and proofs have been given of an attempt to imitate Europeans in their superior skill and knowledge.

Among the more imaginative people of India, with their florid religion and exaggerated poetry, we might reasonably look for greater advancement in the art, yet no specimen of considerable antiquity has been preserved to show what was the former state of painting in that country, and as to the modern productions of India, as conveyed to us in the designs on their tapestry, shawls, and carpets, they have become celebrated on account of the excellence of the materials and not on account of the purity of the design. Of the just proportions of the human figure the artists of that country are totally ignorant, and their representations of the lower animals are not always clearly distinguishable, the one from the other.

The Japanese appear to have attained considerable dexterity in many of the arts; and even in painting the old Japan figures more nearly approach to beauty of style than is the case with Chinese productions of a similar kind.

Section IV. On Etruscan Art.

We have now to consider the state of art among a most interesting people, whose origin and history are involved in obscurity, and whose early acquaintance with science has excited much astonishment among those who have searched the most deeply into the subject, and have traced their progress by means of the beautiful and curious specimens of their works still extant. These are the Etruscans, respecting whom, most authors agree that they were not the aboriginal inhabitants of the land of Etruria, yet none are decided where

they came from, or who they were. The early works of the Etruscans are not superior to those of other nations, but, either through intercourse with Greece, or through the original genius of the people, they had attained to considerable eminence in the arts before Rome was founded, for Pliny tells us that there were beautiful pictures at Ardea and Lanuvium, which were older than Rome. According to Winkelman the Etruscans were advanced in art even before the Greeks, and it was a tradition of the remote ages, that Dædalus flying from Minos settled in Etruria and first sowed the seeds of design. Heyne also says that before Rome was built, casting of metal, sculpture, and painting existed in Etruria anterior to any connection of the Etruscans with Greece.

Very few relics of importance, such as should give evidence of their talents in art, had been discovered of this ancient people, until 1760 when tombs decorated with various designs were brought to light at Tarquinia, the capital city of ancient Etruria. Public attention does not appear to have been greatly excited by this event till the commencement of the present century, when private collections of Etruscan objects began to be formed and valued, and when fac-similes of pictorial decorations of tombs were publicly exhibited in London, with the monumental statues themselves. Mrs. Hamilton Grey, in her interesting work on Etruria, describes her visit to this exhibition, previously to her departure for Italy, and expresses the astonishment which was naturally felt at the sight of objects of such size and grandeur as the colossal statues then before her, and which had lain undisturbed throughout so many ages. But as it is with the paintings of Etruria we are now concerned, we shall content ourselves with quoting her remarks on those which formed part of the same exhibition. "Having seen these tombs, we were conducted up stairs into other small dark chambers, I think four in number but all separate from each other, and lighted in the same manner. They were without sarcophagus or ornament, but had described upon the walls a series of the most spirited and lively coloured paintings. In one was a Triclinium, a man and woman richly dressed being seated together as if presiding over some grand entertainment, with piles of vases and tazze near them, dancers, and players upon instruments on each side, and servants waiting to carry round viands and wine. In another chamber was a chariot race, in another, horses caparisoned, and dancers, in another, a fight, all expressed with a grouping and a spirit which was Greek, and a mannerism which was Egyptian." On a subsequent visit to Tarquinia itself, Mrs. Grey had an opportunity of inspecting many similar works. She was informed that the necropolis or burying-place of that city was computed to extend over sixteen square miles, and judging from the two thousand tombs which have been opened of late years, the number in all cannot be less than two millions! This is sufficient to give us an idea of the dense population of ancient Etruria, especially as this necropolis stands not alone, but is surrounded on all sides by cemeteries scarcely inferior to itself, one of which, (that of *Castel d'Asso*,) Mrs. Grey speaks of as having probably been the Westminster Abbey of Central Etruria. Of the great number of tombs which have of late years been excavated at Tarquinia, only nine are preserved for the inspection of the curious. One of the most interesting though by no means the most important is the *Camera del Morto*, as it has been called, in allusion to the subject which decorates its walls. "It exhibits," says our authoress, "an affecting scene of domestic manners, the preparation of a dead body for its last resting-place, and the piety of the daughter and friends of the deceased. The paintings remain only on three walls of this chamber; those on the side of the entrance, which consisted of fabulous animals, being obliterated. On entering we were struck with the graceful figure of a girl clad in a mantle and tunic, having jewelled ears, and pointed buskins, with hair dishevelled, and in an attitude of grief, who performed the last sad offices for an aged man. He, venerable from his white hair and beard, is laid out on a bed of state, ornamented with purple, and covered with a tunic which reaches midway down the leg, and is joined to a hood like that of modern friars coming over his head, which rests on a double pillow. To watch the last moments, as well as to close the eyes and mouth, to wash the body, and to anoint it, was always the child's office. And here she is assisted by a son, or some very near relation, who touches the knees of the corpse with his left hand, his right being raised to his head, with the expression of lively sorrow, while he bids his last adieu. A fragment of an inscription is all that remains. The usage of the Etruscans to honour their dead with music and dancing is not here forgotten. The very chamber of death is not without this somewhat incongruous accompaniment; while on the middle wall a dancer is introduced, who, to the sound of the flute, pours out a libation beside a large vase ornamented with fillets, placed in the centre of the picture; and two more dancers are represented, one of whom is emptying a tazza."

Another tomb exhibited a very different scene; a luxurious and splendid entertainment formed the inappropriate subject for the decoration of the chamber of the dead. We have not space for the very interesting and elaborate description of this and the other tombs, as given by Mrs. Grey, but the complicated nature of the representations on the walls give us no mean opinion of the school of Etruscan artists, as it regards the design and grouping of their subjects. The painting in the tomb we have alluded to, which is called the *Grotta del Triclinio*, fully displays the Etruscan magnificence in dress and furniture. Splendid festal dresses adorn the guests, the tables and couches have party-coloured coverings of great richness and beauty, vessels and cups of various forms load a sort of buffet at the side of the festal chamber, dancing-girls are present habited in dresses of the most splendid material, embroidered with minute stars, and adorned with party-coloured garnitures, and every appearance of luxury attends this funeral entertainment. A remarkable frieze of figures drawn in a very spirited manner but not shaded, and with colours scarcely distinguishable, is one of the objects of interest in the tomb called the *Grotta del Cardinale*. It consists of a procession of souls to judgment, and one of the groups evidently represents the state of a person, who, during his life had been of a doubtful character, much both of good and evil being attributed to him. He is dragged in a car before the judge by two winged genii, the one good, and the other evil, who are contending for the exclusive possession of him. In the eagerness of dispute the car stops. They cannot draw it on, but remain stationary, to mark the uncertain character of the deceased. The genii in this procession all have wings, while the souls are without them: the evil genii are distinguished from the good by being painted black. Mrs. Grey justly remarks that a visit to the tombs of heathenism brings home to us, with peculiar force, the consolations of Christianity. "To the uninformed Etruscan the passage from the seen to the unseen world was dark and uncertain; he tried to dispel its gloom by the representation of festal gaiety and jocund revelry, by which he beguiled himself with the hope that the state of the departed soul was accurately represented. But that his efforts were unavailing to dispel doubts and care, is proved by the pictures in this and in the following tomb. Here we have the powers of good and evil, contending for one who knew nothing of an Almighty Mediator; and there we have the doleful representation of youth, beauty, and dignity, a prey to fiends, with no friendly power to pluck them from their grasp. How comfortable, nay, how beautiful, do the most hackneyed expressions in our churchyards seem, after a visit to the tombs of these men."

The above account of Etruscan paintings will be sufficient for our present purpose, and we may conclude by saying that the specimens left us of their art are many of them extremely beautiful in taste, design, expression, and drapery; but we have little opportunity of judging of the colouring of the Etruscan school, as fresco, stucco, or distemper (the modes employed by this people) are adapted neither for depth nor for tone. The painted vases of Etruria are extremely beautiful, and the principles of design and proportion in them, are nearly the same as in the finest works of Greek sculpture.

Section V. Ancient Grecian Painting.

For our knowledge of the early state of art among the Greeks we are greatly indebted to Pliny, although that author was undoubtedly mistaken in attributing the origin of painting to Greece. Of the progressive steps of the art in that favoured land we can judge only by inference, for no production of the Grecian pencil remains to aid our judgment, and the opinions of ancient critics are not always satisfactory. We have, it is true, a regular and systematic account of early painting, but it has been objected that the progressive advances follow each other in an order too artificial to represent faithfully the alternate failure and success, which usually attends the course of genius. The progress of the Greeks is said to be as follows. At first the mere outline was traced with a *stylus* or point. After a certain

time, the early artists, having drawn an outline ventured to colour it inside with black, as we do our profile figures. These paintings were called *skiagrams*, from two words signifying "shade" and "to draw," and the artists who could thus fill up a face or figure with black were looked upon as eminent men. After a time the method of producing effect by outlines only began to be understood, and this outline without shade was called a *monogram*, signifying "only to draw." Next came the genius who was bold enough to venture upon *positive colour*. His name was Cleophantus of Corinth, and his mode a very simple one. He ground up a red brick, and used it in a first attempt at imitating the colour of human flesh. On his account the Greeks claimed the invention of colour, although the Chaldeans and the Egyptians had made paintings on their walls and tombs nearly a thousand years before. This discovery was called *monochrom*, or single-coloured: one colour having been employed, it naturally followed that others were soon obtained from different earths; so that *polychrom*, or many-coloured, became the title for the new style of art. We cannot here dwell on the nature of distemper, and encaustic painting, as practised by the Greeks, (for the latter subject we may refer our readers to a recent number of the *Saturday Magazine*,) but must proceed to notice the principal artists and their productions from the earliest times.

We have already mentioned the artist to whom the invention of outline is ascribed by Pliny. The names of Ardices of Corinth, and of Telephanes of Sicyon, are associated with that of Cleophantus, but of their performances we have little notice, except an accusation of Ælian, applicable, no doubt, to this early period, that the artists were obliged to write underneath their wretched designs, "This is a bull, this is a house, this is a tree." Among the monochromatists or single-colour painters, Cimon the Cleonian appears to have far exceeded his fellows. He is said to have invented fore-shortening, and drawing objects at an angle. He varied the characters and forms of heads so as to make them looking up, or looking down, or turning aside; he also improved the draperies by giving them undulations and folds. Another great man of this period, was Polygnotus, the Greek national and monumental painter, who seems to have possessed a real love for his art, and to have been above all considerations of gain. The hall at Delphi and the portico at Athens were painted gratuitously by him, and his disinterested conduct at length met with its proper acknowledgment in a decree of the Amphictyonic council, that he was henceforward to be maintained at the expense of Greece. From his time improvement was carried forward for half a century by Mycon, chiefly remarkable for his skill in representing horses; by the minute and accurate Dionysius of Colophon; by Aglaophon, famed for boldness and energy; by Evenor, the father of Parrhasius; and by Apollodorus the Athenian, who invented or perfected the knowledge of light and shade. Zeuxis improved his style so much by this knowledge as to excite the envy of Apollodorus. According to Pliny, "the doors which Apollodorus opened Zeuxis boldly marched through, daring everything the pencil could do, and carrying it to the greatest glory." This was about the 95th Olympiad. To Zeuxis is attributed the merit of introducing simplicity of composition, relying rather upon the perfection of a single figure to concentrate the interest, than upon the crowd of objects introduced by the earlier masters. He was equally simple in his colouring, using two, or at most four, pigments. After this artist came Parrhasius, who seems to have surpassed him in colouring, but whose works were many of them degraded by indecency. Timanthes became celebrated on account of his representation of the sacrifice of Iphigenia in Aulis, which was full of touching expression. In covering the face of the father who was compelled to attend the sacrifice of his daughter, he appealed more strongly to the feelings, than if he had attempted to depict the grief-stricken countenance of the unhappy parent. Following Timanthes, were Eupompus, renowned for the splendour of his style, Aristides, the great master of expression, Pamphilus, eminent for natural feeling and truth, and Apelles, whose name is synonymous with perfection of finish.

The age of Apelles witnessed both the glory and the decay of ancient art. This refined and accomplished artist was an eminent example of persevering industry, and not only painted assiduously, but wrote copiously on his art. His treatises were extant about the year 1100 of our era, and as they were probably illustrated with designs, their loss is much to be regretted. The leading features of his style were beauty and grace, and in these respects he was followed by the greatest painters of his day. Apelles is said to have been a very generous man, and one who readily acknowledged any points of superiority in others. Pliny has many anecdotes respecting this painter, from which we may select the following. Protogenes, also an excellent artist, was residing at Rhodes, and Apelles sailed to that island to pay him a visit. On his arrival he was disappointed to find the artist absent from home. An old woman showed him into the painting room, where he found a tablet with its wax ground ready for a picture, and taking up a brush, he drew an exquisite line in colour down the tablet. After his departure, Protogenes returned and was shown what had happened, and on contemplating the beauty of the form, he said none other but Apelles could have executed so perfect a work. He then took a brush, and drew another still more refined, saying, "If the stranger call again, shew him this, and say that this is what he is seeking." Apelles returned, and blushing to see himself outdone, took a brush, and drew a third, the refinement of which it was impossible to exceed. When Protogenes saw this, he confessed that he could carry the line no further. This tablet was preserved long after the death of both artists; and after the conquest of the Romans it was preserved in the palace of the Cæsars on the Palatine Hill. Pliny speaks of it as superior to all that could be found in the finest works though consisting of three lines only. What these lines were, it is now impossible to say, though Michel Angelo was of opinion that they must have represented the contour of some part of the body. The tablet was unfortunately destroyed at the same time with the palace where it was deposited.

Apelles has been called the court-favourite of antiquity, since by his pleasing tact in portrait painting, he was enabled to seize on the most agreeable expression of any sitter's face, and to conceal, or to turn to advantage, its peculiar defects. This was the secret, doubtless, of his great popularity. "There is no gratitude," says Mr. Hazlitt, "equal to the gratitude of being successfully painted. Kings bow to the unknown power of having their momentary expressions observed, seized, transferred, and fixed for ages, and whilst colours and canvass last, carried on, for the admiration of a distant age, when the existing one is past and forgotten. What can equal the gratitude of a woman to have her beauty preserved, while she is in her bloom, for the admiration of her children when age has shrivelled her form, or misfortune destroyed her happiness? The world may be elevated, excited, roused, by the commemoration of the great deeds of ancestors or heroes; but no sympathy is ever excited, and no personal vanities are ever so happily gratified by any class of painters, as by the great portrait-painter. The degree of imagination required is not of that irresistible kind which forces him to leave the model before him, using it only to realise his own burning conceptions, so that all likeness of the individual is lost; he requires no more than to retain in his mind the best expression of the individual before him to identify it on canvass. But it must be exactly like, or it is nothing. After the likeness is completed, the sitter will have no objection to the highest degree of embellishment. There the great portrait-painter shews the degree of *fancy* wanted, and he that embellishes most, without losing resemblance, will be the most welcomed, as Apelles was, by the world."

The greatest work of Apelles seems to have been his Venus Anadyomene, but being painted on wood it was destroyed by insects in the time of Augustus. He began another, but died before its completion. It is mentioned as a proof of the reverence entertained for his talents, that although this painting was finished as far as the bust, and the remaining contours were also completed, no one would venture to touch the picture for the final stages of the figure.

Of the other painters of this celebrated period, Asclepiodorus was renowned for proportion, Nicomachus for skill of hand, and Theon for wild conceptions. Pansias and Euphranor appear to have been the greatest encaustic painters. The former was celebrated for his skill in fore-shortening, as we learn from Pliny's description of a bull painted by him, which appeared to project beyond the tablet. Metrodorus, Nicias, and Timomachus are the last we shall mention among the celebrated men of the finest period of Greek painting.

The progress and decline of Grecian art which took place at the time we are now arrived at, has been already traced in our Supplement on Sculpture. We need therefore only allude to the probable causes why painting was not at

any period so completely national in Greece as the sister art, The general taste in Painting was not, as in Sculpture. formed and established by public and venerated monuments, and consequently the wholesome restraints of public opinion could not operate in an equal degree. The ambition and the talents of painters were not excited and directed by the nationality of their performances, nor was the standard of excellence formed until the severe purity of ancient taste had suffered a sad decline. Painting appears to have been too soon abandoned to the caprice of private patronage and judgment, and could never compete with Sculpture, whose labours were publicly dedicated to the renown of the good, the learned, and the brave. One hundred and sixty-nine sculptors are mentioned by Pausanias, while he has only recorded the names of fifteen painters; and after three centuries of spoliation he found in Greece three thousand statues, not one of them a copy, while he describes only one hundred and thirty-one paintings.

Grecian art has been divided into three periods; the first being that previous to the time of Pericles; the second that of Pericles himself, considered the highest and purest in painting, sculpture, and architecture; the third, or epoch of Alexander, the most refined, but prophetic of the corruption which followed. After this last period came the subjugation of the Greeks by the Roman power, and the seizure of their noblest works to adorn the capital of Italy.

Section VI. Ancient Roman Painting.

The time at which painting began to be employed for the purposes of external and internal decoration in Rome, seems to have been that when, during the reign of the Tarquins, Etruria exercised so much influence over the arts of that city. But the first recorded specimen of Roman art was not executed until near two hundred years later, when one of the great and noble family of the Fabii painted the Temple of Health in such a manner, that the work was highly esteemed even after the introduction of Greek pictures. On account of this performance, the family of Fabii took the surname of Pictor. The painting was destroyed by fire, with the temple itself, in the reign of Claudius Cæsar. About sixty years after the time of Fabius Pictor, lived a poet and tragedian, named Pacuvius, who is named as the great painter in the time of the republic. He painted the Temple of Hercules in the cattle market in Rome, and the pictures are said to have given dignity to the art itself.

A singular use made of painting among the Romans is referred to in Mrs. Callcott's *Essays* on the art. The inordinate love of military fame by which they were actuated, found a mode of gratification in this charming art; and it appears, that Valerius Maximus Messala was the first to adopt a practice of exhibiting pictures of his own actions which became afterwards pretty common, though condemned by some of the chief men of the republic. Messala caused a picture to be hung up in the Porta, a pubic place, representing the battle of Messana, where he had vanquished both the Carthaginians and Hiero of Syracuse, who had joined his former enemies to resist the invasion of his country by the Romans. By the means of this picture, Messala kept himself before the eyes of the people in the situation best calculated to further his views whenever he should be a candidate for the magistracy. This picture told the story of his achievement to the best advantage, and was likely to engage the affections of the people on his behalf. These exhibitions were sometimes productive of injurious effects. The anger of Scipio Africanus was excited against his brother, Lucius Scipio, because the latter exhibited a picture of the battle of Sardis, which won him the title of Asiaticus, but in which his nephew, the son of Africanus, was taken prisoner. Scipio Emilianus, again, was highly offended at the display of a picture of the taking of Carthage, exhibited in the market place by Lucius Hostilius Mancinus. It appears that Mancinus was the first to enter Carthage on the taking of the city, and on his return to Rome, being desirous of the consulship, he had a picture painted, representing the strong situation of the town, with its fortifications, and all the machines employed in the attack and defence, besides the actions of the besiegers, in which, care was taken, that those of Mancinus should be most conspicuous. This he hung up in the Forum, and, seating himself by it, he explained to the people all the parts of the picture, particularly those in which he was concerned, in such a manner, that he won their good will, and gained the consulship at the very next election. Paintings were employed in the same way by lawyers, in their pleadings, and became the means of unduly swaying the opinions of the people. They were also carried about by persons who had suffered any loss or misfortune, to excite the sympathy of the benevolent. Though these representations were probably rough in their style of execution, there must have been enough of individual likeness, and of correct grouping, to enable the people to recognise their meaning, and this argues considerable skill on the part of the painter.

From the time of the consul Mummius foreign pictures were daily brought to Rome, and the public buildings of the city were hung with the works of Aristides, Apelles, and all the most famed artists of Greece. In the Temple of Peace was placed the most valued of all the works of Protogenes, *i.e.*, the hunter Jalysus with his dogs and game. This picture was at Rhodes, where the artist lived, when Demetrius laid siege to the town, and it is said that he abstained from an attack which could not have failed of being successful, lest in the confusion of the battle, the picture should receive injury. The Cyclops of Timanthes, and the Scylla of Nichomachus, were also deposited in the Temple of Peace. Some of the most precious works of Zeuxis adorned the Temple of Concord and the private villas in Rome.

The influx of beautiful statues and pictures at Rome during this period, was doubtless the cause of the partial revival of taste, and of the establishment of the numerous schools which sprung up throughout Italy. Yet we do not read of any artist whose name became illustrious. Ludius, of the time of Augustus, is spoken of as the first who decorated the walls of houses with representations of rural scenery; Aurelius, Cornelius Pinus and Actius Priscus were employed by Vespasian to decorate some temples which he rebuilt; but their pictures were of an inferior character, and have few pretensions to excellence. Great encouragement was given to artists in the time of the magnificent Hadrian. But with this emperor and the Antonines the prosperity of the arts ceased. Pliny tells us of an artist of Prætorian rank, Alterius Labeo, who in his time was very skilful in small works of painting, probably miniatures; the same author mentions among the last of ancient Italian painters, Turpilius, a noble Venetian, who painted at Verona, in the first century of our era. It was during this first century that the great catastrophe occasioned by the eruption of Mount Vesuvius took place, when the cities of Pompeii and Herculaneum were buried under vast showers of stones, ashes, and lava. Pompeii remained buried for sixteen hundred and seventy-six years. The first indications of ruins were observed in 1689, but the excavations did not commence till 1755. Such works of art as were not portable, and were therefore necessarily left behind by the flying inhabitants, still remain as fresh as at the day of their disappearance, and the discovery of these cities has therefore greatly enlightened us with respect to Roman arts and customs. "Every one must be struck," says Mrs. Callcott, "with the great disparity between the bronzes and marbles, and the pictures of Pompeii. Some of the bronze figures, and most of the furniture of that metal, are exquisite in taste and execution, and many of the marbles are not far behind them. But the pictures are of a very inferior character, generally speaking. Single figures there are of great beauty, and some arabesques elegantly designed; but the groups are for the most part more like sculpture than painting; and the few landscapes are little better than those of the Chinese. To account for this in some measure I would suggest, that the pictures we have found are merely the decorations of small private houses, and that they must have been executed late in the decline of art, because the great earthquake which had destroyed the temples of Pompeii but a few years before that eruption of the mountain which buried the town, must have shaken the stucco from the walls, and with it whatever specimens of art of a better time might have then existed. Besides, the inhabitants of Pompeii had, most of them, time to escape with their most precious moveables. Now if any of the residents at that small provincial town possessed any Greek pictures or others of value, they were painted on light wooden panels (larch or sycamore) and were easily removed, so that if not saved, they must have been consumed in the fields by the fiery showers that destroyed more persons without the gates of the town than within them. Hence I cannot think that the pictures of Pompeii furnish a fair criterion by which to judge of the real nature of antique painting, any more than the arabesques that have been found in the Roman baths and subterranean chambers of the palaces, which we can

not suppose to have been the places where the choicest works of arts were placed."

Premising thus much, concerning the impropriety of judging of the Roman schools of painting in general by the specimens discovered at Pompeii, we proceed to notice some of the existing remains of art in that long buried city. Examples are found, in great number, of the walls of apartments being painted in a fanciful manner, and sometimes the method employed by the artist is very singular. The picture, though not in an ill state of preservation, and though to be seen at a convenient distance, is quite undistinguishable on a nearer approach. Sir W. Gell describes a painting of this kind in a chamber near the entrance of the Chalcidium. At a certain distance a town, a tent, and something like a marriage ceremony, might be perceived; but which vanished into an assemblage of apparently unmeaning blots, so as to entirely elude the skill of the artist who was endeavouring to copy it at the distance of three or four feet. Another picture of the same kind was visible in the chamber of the Perseus and Andromeda. An entire farm-yard, with animals, a fountain, and a beggar, seemed to invite the antiquary to a closer inspection, which only produced confusion and disappointment, and proved that the picture could not be copied, except by a painter possessing the skill and touch of the original artist. A house of the minor class, yet remarkable for the paintings with which it was adorned, was visited by Mayois in 1812. He copied two of them, and shortly after that time the plaster detaching itself from the wall, they fell, and were destroyed. The subject of one of them was taken from the Odyssey, and represents Ulysses and Circe, at the moment when the hero, having drunk of the charmed cup, draws his sword and advances to avenge his companions. The goddess, terrified, makes her submission at once, as described by Homer, while her two attendants fly in alarm. Circe uses the very gesture of supplication so constantly described by Homer, as she sinks on her knees, extending one hand to clasp the knees of Ulysses, with the other endeavouring to touch his beard. In a house called *Casa Carolina*, because it was excavated in the presence of Queen Caroline, the paintings were found in good preservation, though they have rapidly decayed since that period. Two of them are engraved in Sir W. Gell's work. One of them is explained to be either Diana and Endymion, or Venus and Adonis. A youth, whose head is encircled with rays of light, is sitting down holding two spears; a female figure of great beauty is approaching him, and between them is Hymen with his torch and palm-branch. The female is rather scantily dressed, but richly ornamented with ear-rings, necklace, armlets, and bracelets. The other picture represents Perseus and Andromeda after the hero has slain the monster. He holds behind him something like a skull, which is probably intended for Medusa's head, and his double-pointed sword lies beside him on the ground. Andromeda is in full costume, and wears a white tunic, with a blue peplum or large wrapper.

The house of the female dancers in the street of Herculaneum, is remarkable for the beauty of its paintings. Among them are four elegant figures of female dancers, from which the house receives its name. Another represents a figure reposing on the borders of a clear lake, surrounded by villas and palaces, on the bosom of which a flock of ducks and wild fowl are swimming. The *Fullonica*, or scouring-house, had its walls adorned by a very interesting series of paintings, where the various processes connected with fulling and scouring cloth are admirably illustrated. The house of the tragic poet, and the houses of the great and little fountains, excited a great sensation at the time of their discovery, not so much for their extent, as on account of the beauty and richness of their decorations. In the former dwelling was found a painting that has been esteemed one of the most beautiful specimens of ancient art that has descended to modern times. The subject is Achilles delivering Briseis to the heralds. It is thus described by Sir W. Gell:—"The scene seems to take place in the tent of Achilles, who sits in the centre. Patroclus, with his back towards the spectator, and with a skin of deeper red, leads in from the left the lovely Briseis in a long and floating veil of apple-green. Her face is beautiful, and, not to dwell upon the archness of her eye, it is evident that the pouting of her ruby lip was imagined by the painter as one of her most bewitching attributes. Achilles presents the fair one to the heralds on the right; and his attitude, his manly beauty, and the magnificent expression of his countenance, are inimitable. The tent seems to be divided by a drapery about breast-high, and of a sort of dark bluish-green, like the tent itself. Behind this stand several warriors, the golden shield of one of whom, whether intentionally or not on the part of the painter, forms a sort of glory round the head of the principal hero. It is probably the copy of one of the most celebrated pictures of antiquity. When first discovered, the colours were fresh, and the flesh particularly had the transparency of Titian. It suffered much and unavoidably, during the excavation, and something from the means taken to preserve it, when a committee of persons qualified to judge, had decided that the wall on which it was painted was not in a state to admit of its removal in safety. At length, after an exposure of more than two years, it was thought better to attempt to transport it to the studii at Naples, than to suffer it entirely to disappear from the wall. It was accordingly removed with success in the summer of 1826, and it is hoped that some remains of it may exist to posterity."

In the same house is a representation on a white ground of the combat between the Greeks and Amazons. Some of the female warriors are in chariots, some on horses, and they are armed with bows, shields, and battle-axes. They are clothed in blue, green, and purple draperies, and are represented in violent action. The men are distinguished by wearing helmets, while the women have the head bare. These figures are more remarkable for their spirited composition, than for accuracy of drawing. A very beautiful production ornaments a chamber in this house, called, from the subject of the picture, the chamber of Leda. Pictures of Venus and Cupid, of Ariadne, and of the sacrifice of Iphigenia, also serve to increase the interest attached to this dwelling.

At the north-east angle of the Forum, stands an edifice called the Pantheon, which contains several paintings worthy of notice. The designs are well composed and the colours brilliant. One of the most interesting is that of a female artist, holding in one hand an oval white palette, apparently of silver, in the other, brushes tinged with several colours. Her five fingers appear to grasp the palette, through as many holes perforated in the metal. The paintings, for the most part, consist of architectural compositions of long aërial columns, vistas seen through doorways, showing the ornamented ceilings, a variety of figures and borders of flowers generally painted in dazzling colours, among which, bright vermilion, jet black, deep crimson, azure blue, and bright yellow, prevail to form the ground. A variety of mixed tints are added to these, which consist principally of light greys, pink, purple, and green. In the centre of compartments formed by the arabesques, historical subjects are painted. The subject of one is the return of Ulysses in disguise to Ithaca, and his meeting with Penelope, as recorded in the nineteenth book of the Odyssey. The picture represents the queen inquiring of the supposed mendicant stranger for tidings of Ulysses. She is clothed in a violet coloured robe, and a white mantle, or perhaps a species of veil. She holds the materials for spinning in her hands. Ulysses has a white tunic, and a yellow chlaymis or pallium. The attendant Eurynome is also represented. The distinguishing characteristic of this painting is said to be its total absence of affectation. There is not that strong effect of light and shadow employed in modern painting, for though the picture is shaded it is only to a depth that might exist in the open air. The following remarks of Sir W. Gell, made in connection with the painting we refer to, are interesting and important:—"It is of consequence to preserve everything which can convey to us the conceptions which the ancients themselves formed on the subjects connected with poetry and history, before dress and manners had undergone that complete change which took place soon after the general introduction of Christianity. By collecting the materials which Pompeii and Herculaneum have already furnished, and may hereafter supply, we shall probably, ere long, have the means of forming editions of the writers of antiquity, and decorating our classical and mythological dictionaries with figures and illustrations which the ancients themselves might have approved, but which have hitherto been attempted in vain."

In the house of the Quæstor, otherwise called the house of the Dioscuri, or sons of Jupiter, there are some excellent paintings of figures, among which we may notice that of Jupiter seated on his throne, and crowned by Victory, attired in her usual flying drapery and with S.C. on her shield. The figure represented in our frontispiece also represents Victory, but differs materially from that of which we have just spoken. It is conjectured that the

genius of Rome may possibly be intended by this elegant figure, as the globe in her hand may be understood to signify. The trophy in her left hand proves the goddess to be of Roman, and not of Grecian invention. The globe does not bear any representation of oceans or continents, but is merely marked with a few indistinct touches.

From the preceding account it will be evident, that although the faults of the paintings at Pompeii taken as a whole may be numerous, as it respects accuracy of perspective and other important particulars, still there is sufficient beauty in many of the groups and single figures, to make these remains of ancient art important to those who wish to study the grouping and composition of the ancients, and to render them worthy of their most attentive consideration.

Mrs. Callcott mentions the discovery of two very beautiful specimens of antique painting, found in a vineyard near Rome in 1823, which seem to corroborate her opinion that the pictures scattered through the Italian provinces were generally inferior to those belonging to Rome itself or the immediate neighbourhood. One of these was the half figure of a boy, with a double flute; broad in colour and effect, and round and fine in form, somewhat resembling one of the Venetian frescoes, particularly those of Paul Veronese. The other was a Ganymede, very beautiful in form, and remarkable for the effect of light and shadow. The light in this painting is described as falling principally on the body of Ganymede in the centre, and illuminating the blue sky on the left; but a low light stone altar is placed on the right to balance it. Over the altar an eagle with outstretched wings is dark, and the shadow is continued behind the lower part of the figure of the boy by a purple mantle.

Section VII. Materials employed in the Paintings of the Ancients.

The ancients painted principally upon wood, of which we find the larch, the cornel, the cedar, the cypress, the holly, the sycamore, and the box-tree, mentioned by ancient writers. The boards or tablets were prepared with a thin ground of chalk and size of some kind. Linen cloth or canvass was also employed to paint upon, but we have no direct evidence of its use before the reign of Nero. Parchment, ivory, and plaster were the other materials. With respect to the pigments employed by the ancients, the greater number are employed still. It is commonly believed that only four colours were known in the time of Apelles, and that these were white and black, and red and yellow ochres. This belief is founded on an expression in Pliny to that effect, but when we find Pliny himself describing the Venus Anadyomene of Apelles, as rising from a green or azure ocean, under a bright blue sky, we are at once undeceived on this point. Other authors lead us to the conclusion, that so many and so beautiful were the ancient pigments, that it is doubtful whether modern science has given us any advantage in this respect. In the Egyptian catacombs, long before the time of the great painters of Greece, blues and greens are as commonly found as yellows and reds. And we know that in the time of Moses, scarlet, red, blue, and purple, were the colours employed in the furniture of the ark of the covenant, and the vestments of the priests.

Of the white colouring matters, the ceruse, or white lead of modern painters, was known to the ancients, but could not have been so valuable to them, unless they had some oils, or vehicles of that nature, wherewith to apply it, for it turns black when used in water or fresco painting. A natural earth from Egypt, Crete, and Cyrene, was much valued; a very fine pigment was also made of chalk ground with the white glass of which rings and other ornaments were made, and therefore called *annulare*. The finest description of lime was used, repeatedly washed, and beaten, and then formed into cakes which were dried in the sun.

The Romans divided colours into two classes, florid and grave, and we may adopt this division in speaking of the ancient pigments. The florid colours were the more valuable, and appear to have been cinnabar, minium, armenium, purpurissum, indicum, ostrum, chrysocolla.

Vermilion, called in its rough state cinnabar, is the most brilliant and valuable red, and appears to have had something of a sacred character in the estimation of the Romans, since the first duty of a censor, in entering upon his office, was to paint Jupiter's face with vermilion, and the faces of all the gods were adorned in a similar manner. Theophrastus tells us, that Callias, an Athenian, calcined it, and brought it to its very fine colour. Minium, or red lead, is often confounded with native cinnabar, but is decidedly inferior in quality, and blackens on exposure to light and air, unless secured by strong varnishes. Armenium, purpurissum, indicum, or indigo, and ostrum, were different shades of blue, the first being the splendid colour now called ultra-marine. Theophrastus says that one of the kings of Egypt invented the method of making the beautiful Armenian blue, so precious, that kings sent presents of it to each other. The lapis lazuli, from which the colour is obtained, is found in Siberia and on the borders of Persia, as well as in China, where the preparation of the colour has long been known. Some of the ancient imitations of this beautiful colour were composed of earth, boiled with woad, or indigo. Several lumps of a deep blue substance, found in the baths of Titus, were analyzed by Sir Humphrey Davy, and were found to be a frit made by means of soda, and coloured with oxide of copper. Powdered and mixed with chalk, they produced tints exactly corresponding with the blues still preserved on the walls of the same baths. Indigo was introduced into the West from India, not long before Pliny's time, and was immediately adopted for shadows and strong lines. All the ancient greens examined by Davy, proved to be combinations of copper, and there is every reason to believe that the native chrysocolla was carbonate of copper. The name of chrysocolla (gold-glue), was probably derived from the green powder used by goldsmiths as solder, into which copper entered.

The austere colours were more numerous than the florid. Of the red earths, Sinopis, brought from the city of Sinope in Pontus, was much esteemed. The red grounds at Pompeii and elsewhere were made with this colour. It is now sold in our shops as Armenian bole, and is used in some manufactures. There was a red colour used by the ancients especially to represent blood, and from their account of it, they were evidently ignorant of its origin. They described it as produced by the mixed blood of elephants and dragons in their deadly fights. This is probably the same substance still called dragon's blood, the resin of the *Dracæno draco* of Linnæus. Sandaracha was a substance found in gold and silver mines, varying between red and yellow. There was also a paler sort of sandaracha, which, with orpiment, or sulphuret of arsenic, and the several ochres, made up their different yellows. The Attic and Gallic ochres were pale, but many of those found in the hills near Rome were darker, and their tints were still farther deepened by burning. Several of the ochres when burnt assume a reddish hue. The blacks used by the ancients appear to have been the soot collected from burning such substances as resin or pitch. Black was also obtained from a peculiar earth, and from the blood of the cuttle fish. Atramentum was the name given to the best kinds of black—Kalcanthon, to the vitriolic black, only used for staining wood. Two kinds of blue were formed with a sand procured in Egypt, Scythia, and Cyprus, which was dyed with the juice of herbs. These blues were called respectively cæruleum and lomentum.

In concluding our notice of this subject we employ the language of Sir Humphrey Davy:—"It appears that the Greek and Roman painters had almost all the same colours as those employed by the great Italian masters, at the period of the revival of the arts in Italy. They had indeed the advantage over them in two colours, the Vestorian or Egyptian azure, and the Tyrian or marine purple.

"The azure, the red and yellow ochres, and the blacks, are the colours which seem not to have changed at all in the ancient fresco paintings. The vermilion is darker than recently made Dutch cinnabar, and the red lead is inferior in tint to that sold in the shops. The greens in general are dull. Massicot and orpiment were probably among the least durable of the ancient colours.

"If red and yellow ochres, blacks and whites, were the colours most employed by Protogenes and Apelles, so are they likewise the colours most employed by Raphael and Titian in their best style. The St. John and Venus in the gallery at Florence, offer striking examples of pictures in which all the deeper tints are evidently produced by red and yellow ochres, and carbonaceous substances."

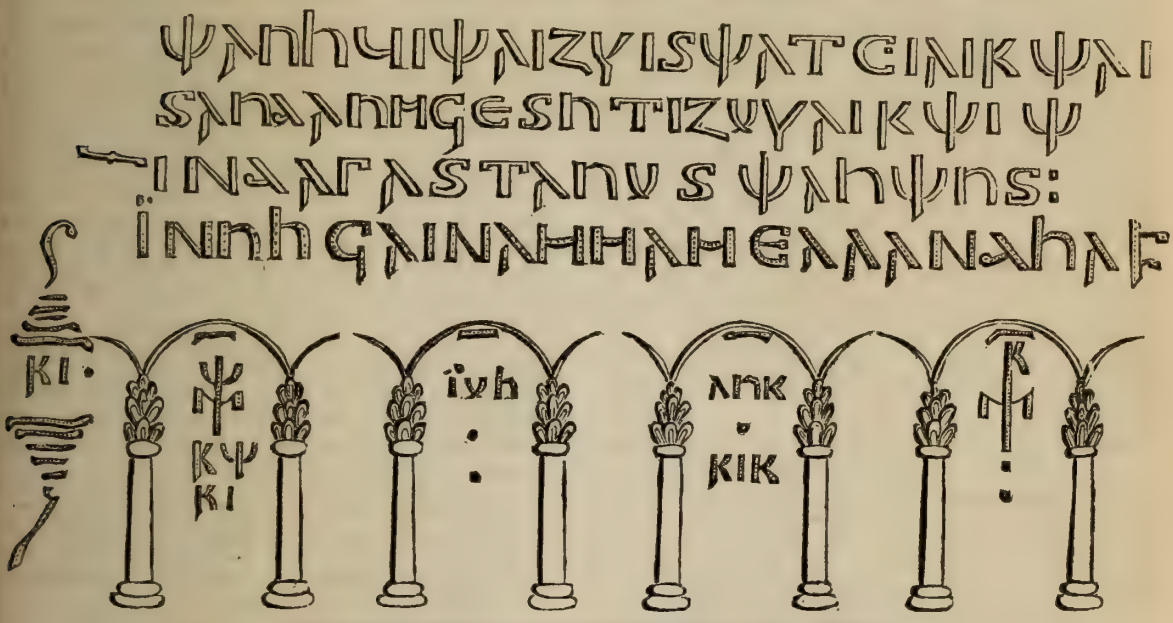
LONDON:
JOHN WILLIAM PARKER, WEST STRAND.
Published in Weekly Numbers, price One Penny, and in Monthly Parts, price Sixpence.
Sold by all Booksellers and Newsvenders in the Kingdom.

THE

Saturday Magazine.

No. 606. DECEMBER 11TH, 1841. { PRICE ONE PENNY.

THE SILVER BOOK OF THE GOSPELS.



FAC-SIMILE SPECIMEN OF THE SILVER BOOK OF THE GOSPELS.

THE art of printing was first brought into use by Europeans about four hundred years since, when our ancestors began to shake off their long sleep of a thousand years. Five centuries before that the Chinese began to use the same art at the opposite extremity of the Old World, when England was struggling for life against the Danes; but a sort of printing or impressing was practised in Europe perhaps fifteen, or at least thirteen centuries ago. So near indeed did this mode of impressing approach the present art of printing, that it is surprising no further progress was made. It would be a curious speculation to consider how far the complete discovery of printing might have repelled the thick cloud of ignorance which hovered so long over Europe: the effect may not perhaps have been great: the barbarous tribes who overwhelmed the civilized world might not have appreciated the art, though the subject of this article shows that, under one aspect at least, they were not inattentive to literature. One valuable result would have been, that many important works now lost would have been preserved.

Only one work is now known to exist impressed in the manner alluded to, though probably others were executed in the same way. It is a translation of part of the New Testament into a very ancient dialect of the German language, and is commonly known by the name of the Gothic Gospels, or the Silver Book. It is deposited in the Public Library at Upsal, in Sweden. This book is composed of very thin smooth vellum, of a fine purple or violet colour, and something of the shape and size of the *Saturday Magazine*. The first three lines of each Gospel, the beginning of the Lord's Prayer, and of any other important passage, and the names of the evangelists, are impressed in gold letters: the rest is all in silver. Much of the volume, in fact nearly a half, is now lost, but more than one hundred and sixty leaves are yet remaining, to show how beautiful the whole must have been when complete, and to enable an artist to judge with accuracy of the means by which the work was done.

Any one who has seen a bookbinder letter the back of a book will have a good idea of the manner in which the Silver Book was executed, for there is no doubt that the processes were very similar. A bookbinder rubs some sticky substance, such as white of egg, on the book he is about to letter, places a leaf of gold upon it, and then takes up a series of heated metal letters, one after another, and presses each in its turn strongly upon the gold leaf. The gold is firmly fixed upon the leather in the places where the impression is made, and the remaining loose gold is wiped off with a rag. This was the old process of lettering, which is still much in use, and this was the way in which the Silver Book was executed, only that silver was used instead of gold, and a cement of an oily nature instead of the white of egg.

Much dispute having arisen as to the reality of this process, Professor Ihre instituted a very minute examination of the Codex in the presence of four literary gentlemen, and came to the conclusion that the work was produced by the impression of metal types. In the first place each letter is respectively so exactly similar in form to every other, that it would be quite impossible for the best writer to imitate its perfect regularity: this argument will be best appreciated by those who have compared the very best manuscripts with any printed book whatever: they must have remarked that in print, from all the similar letters being cast in the same mould, the regularity is indisputable, however defective in other matters the execution may be. The next proof was the tangible remains of the impression: the form of every letter is hollow on the face of the vellum, and on turning to the back of the leaf, it is there found to be convex.

so palpably that the simplest touch will immediately show the place where the type has been pressed down, the margin being quite smooth and the impressed part rough. In a hundred cases the substance of the vellum has been actually cut out by the impression of the tool, while the surrounding leaf is entire. To complete the evidence, a film of a glutinous or oleaginous nature was in many parts perceptible, in a strong light, between the metallic foil and the vellum to which it had adhered.

The only argument now remaining for those who contended that the whole was written with a pen, depended on the assertion that vellum could not be impressed in that way, without wrinkling up and becoming contracted. This was however disproved by Gerard Meerman, who says, in his *Origines Typographicæ*, that his bookbinder tried the process for him, and found it succeed as well with vellum as with leather.

Some fragments of other portions of Scripture have since the discovery of the Silver Book been found in several places, particularly parts of the Epistle to the Romans, in the Library of Wolfenbuttle: these were published by Knittel, who states that they appear to have been impressed in a similar way to those of the Upsal Book. It is curious enough that this language should be the only one in which evident proofs of the practice of this art should be found. It must have been too costly for ordinary use, and perhaps the only persons rich enough to command such expensive luxuries were the monarchs of the conquering tribes by whom the language was spoken.

The history of the Silver Book is curious: it had been lying from an unknown period in the Library of Werden, near Dusseldorf, on the Rhine, until the early part of the seventeenth century, when it was removed to the city of Prague, in order to escape the ravages of the thirty years' war. When that city was taken by Konigsmark, the book came into the possession of the Swedes, and was deposited in the Royal Library of Stockholm. Very soon after this the learned Vossius became possessor of it,—how, it is not known, but he was suspected of having stolen it, while on a visit to Christina, queen of Sweden. Voss took it with him to Holland, where about seven years after it was seen in his possession by Puffendorf, who purchased it for the sum of six hundred rix dollars, on account of the Count Gabriel de la Gardie, by whom it was presented to the Public Library of Upsala, where it still remains.

The language and age of this version of the Scriptures have been still more a subject of dispute than the manner of its execution. It is commonly called Gothic, and supposed to be the translation made in the middle of the fourth century by Ulphilas, bishop of the Goths,, who then inhabited the country now called Walachia, on the lower part of the Danube. This is still the usual opinion, but several learned men have called it in question; they argue, and we are much disposed to agree with them, that there is no evidence whatever of its being Gothic, and that the presumption is rather in favour of its being Frankish, because the place where it was found was not inhabited by the Goths but was a portion of the territory of the old Franks. The alphabet is very similar to that of the known existing remains of old Frankish, and two additional characters, found in no other dialect of the German tongue, very nearly amount to a positive evidence of the country and date of the work. Those letters are Ψ and Θ, the first of which, in the Silver Book, stands for *th*, and the last, for *qu*. Now it is stated expressly by Gregory of Tours, a French historian, who lived in the sixth century, that Chilperic, king of the Franks, ordered four letters to be added to the alphabet of their language, and the two letters given above are among the four. As the use of these letters ceased with the life of the monarch who introduced them, the date of the book, if this opinion be well founded, may be ascertained within a short period, Chilperic having died in 584, after a reign of seventeen years. Perhaps in this, as in many other disputes, there may have been truth on both sides; the translation may have been that of Ulphilas, and the copy now existing impressed by a Frank of the time of Chilperic. The language of all these tribes was the same. Procopius in the sixth century, and still more positively Walafrid Strabo in the ninth, asserts this; his words are, "The Goths or Getes who dwelled in the provinces of Greece, when converted to the faith of Christ, used our language, that is the Theotisc . . . they had the Scriptures translated into their own tongue, copies of which are yet in existence." The word Theotisc is nearly identical with Teutsch, the name by which the Germans designate their country and language to this day: and the Franks used a cognate language even in France, as late at least as in the days of Charlemagne.—Whichever way the question may be decided, it must be admitted that the Silver Gospel is one of the oldest books and most curious remains of ancient art known to be in existence.

A fac simile of part of a page of the Silver Book is given at the head of this paper. The four lines shown contain the twenty-fourth and beginning of the twenty-fifth verses of the eleventh chapter of Saint Matthew, with the exception of the first syllable of the twenty-fourth verse, which is in the preceding line, not copied here. The twenty-fifth verse being the beginning of a new subject or section is headed with gold in the original, shown in the fac-simile by dotted letters. The transcription in Roman letters and literal translation will stand thus, supplying the few letters at the beginning and end to make complete sense:—

[Swe] thauh qwitha izuis thatei airthai	Truly I say to you that for the earth
Saudamge sutizo wairthith	of Sodom better it shall be
in daga stauos thah thus.	in the day of judgment than for you.
Inuh gainamma mela andhaf [Iasus].	In that time [Jesus] answered.

The bottom of the page has been selected for the purpose of showing the ornamental mode of exhibiting what appears to be the parallel passages. The letters RI, on the left of the colonnade, stand for 110, being the number of the section, as at that time the New Testament had not been divided into chapters and verses. The monogram in the first arch, composed of M surmounted by Ψ (th), stands for Matthew, and the letters under it for 109, 110. In the next arch stands JOH, and in the third LUK, with the letters RIB, meaning 112; in the fourth arch is the monogram $\frac{S}{M}$ for Mark. All these letters are of gold; and the effect of the whole, combined with the purple hue of the vellum, is a degree of magnificence which could not have been expected in a work executed at such a period, and which is not often surpassed in our own day of splendid typography.

THE present life overcomes futurity, by being daily with us, as a small object near the eye can shut out the most magnificent prospect beyond.—AIRD.

To play with important truths, to disturb the repose of established tenets, to subtilize objections, and elude proof, is too often the sport of youthful vanity, of which maturer experience commonly repents. There is a time when every man is weary of raising difficulties only to task himself with their solution, and desires to enjoy truth without the labour or hazard of contest.—DR. SAMUEL JOHNSON.

FABLES were suffered to float vaguely through the popular mind of the ancients, but of religious instruction, in our sense of the words, no trace is to be discovered, except amongst the Jewish nation.

IF the evidence of revelation had been weak, why were minds like those of Locke, of Bacon, and of Newton, which boldly destroyed prejudices in science, blind to those in religion?—LORD TEIGNMOUTH.

LIGHT AND DARK MORNINGS.

In the pages of that once almost universal Kalendar, the venerable *Vox Stellarum*, which still annually announces itself as "containing all things fitting for such a work," under the undying editorship of "Francis Moore, Physician," who, regretfully be it spoken, yet holds his oracular sway over the minds of thousands, many of your readers will have noticed a column headed "clock before the sun," or, "clock after the sun." It is well known that a sun-dial and a well regulated clock seldom indicate precisely the same time; and the information contained in the undying editor's table of "the equation of time," is duly appreciated by those who wish to regulate their clocks or watches.

It is not my purpose to give a long or learned dissertation on the subject of the "equation of time*," or to explain at much length the different terms used for denoting time's admeasurement. There is solar, or apparent, time, as shown by a sun-dial; and there is mean time, or true time, as shown by the clock. There is the sidereal day, that is, the time of the earth's revolution on its axis, or the time that elapses between the southing of any star to-night and its coming to the meridian, or southing, the next night, which is 23 hours and 56 minutes; and there is our solar day of 24 hours, that is, 24 hours, on an average, throughout the year.

Then we have the astronomical day, commencing and terminating at noon, computed by 24 hours, (not 12 and 12, as in the solar day;) thus October 12th 16h. 30m. of astronomical time, means ½ past 4 of the morning of the 13th by the ordinary mode of computation; and we have the original, the primeval day, commencing and terminating in the evening, as in the language of Holy Writ, "And the evening and the morning were the first day," which mode of computation is still observed by the Jews, their sabbath terminating on the evening of our and their "seventh day, which is the sabbath of the Lord." At this time, 6 o'clock in the evening, they reopen their shops, which have been closed since 6 o'clock of Friday, and again commence business for the remainder of the Saturday evening, closing them during the Sunday; thus "losing," as some will term it, two days in the week, by continuing to observe their own, as well as the Christian sabbath. May the day speedily approach when they shall come into the true sheepfold.

When at school, we were rightly instructed that, "the sun sets as much after 6 as it rises before, or as much before as it rises after." This is worth remembering: and to such of our younger readers as are not familiar with the rule, we recommend a second perusal. But it applies only to 6 o'clock *solar* time, and not to *true* time: for a person who should suppose, on the 13th of October, for instance, and the 1st of March, (these two days being of equal length,) that the sun will rise at the same time, on each day, by the clock, would find himself just half an hour wrong in his reckoning; as a reference to any Almanac that gives the sun-rise and sun-set in *true*, not *solar*, time, will immediately convince him.

There are only four days in the year on which the clock and sun coincide, viz,—the 15th of April, the 15th of June, the 1st of September and the 24th of December; and the times of greatest variation are the 10th of February, when the clock is 15 minutes *before* the sun, and the 2nd of November, when it is 16¼ minutes *after* the sun; thus making a difference of half an hour between the two extremes. And to this, as the cause of our "light" or "dark" mornings or evenings, it is my wish to direct the attention of the reader.

It may be seen by referring to any table which gives the time of sunrise and sunset at London, that on the 21st of February and the 21st of October, the sun rises at 52 minutes after 6, *solar* time; now both days being of equal length, (10 hours and 16 minutes,) the sun of course rises at the same hour, *solar* time, each day; and according to the rule previously mentioned, he must set 52 minutes before 6 *solar* time, but if we take the time by the clock, we shall find that he rises half an hour later on the 21st of February than on the 21st of October; for in February the clock is 14 minutes *before* the sun; and consequently, by clock time, he rises 6 minutes after 7, and the mornings are "dark." In October, on the contrary, although the day is the same length, yet the clock being 16 minutes *after* the sun, he rises 36 minutes after 6; and the mornings are "light," and at this season of the year, early risers reap a decided benefit from the phenomenon of nature.

Early rising! Oh that we had more practical acquaintance with this blessing, that we were more alive to the beauties and melodies of the "sweet hour of prime," that we more frequently compelled ourselves to taste the pleasures so rapturously described by the poet,

> The morn is up again, the *dewy* morn,
> With breath all incense, and with cheek all bloom,
> Laughing the clouds away in playful scorn—

To a contemplative mind, and a lover of nature—to one who

> Looks through nature up to nature's God.

the theme is inexhaustible. With heart and soul he adopts Beattie's beatific outburst to the "melodies of morn;" as, with emotions known only to him who can lift his eyes to heaven and say "My Father made them all," he exclaims

> But who the melodies of morn *can* tell?
> The wild brook babbling down the mountain side;
> The lowing herd; the sheepfold's simple bell;
> The pipe of early shepherd dim descried
> In the lone valley; echoing far and wide
> The clamorous horn along the cliffs above:
> The hollow murmur of the ocean tide;
> The hum of bees; the linnet's lay of love;
> And the full choir that wakes the universal grove.

And, adopting the same writer's description of the beauties of morning, say,

> Oh how [can I] renounce the boundless store
> Of charms which nature to her votary yields?
> The warbling woodland, the resounding shore,
> The pomp of groves, the garniture of fields;
> All that the genial ray of morning gilds?

Gentle reader! excuse this digression; and, with one more extract, I will return to the subject of my paper: it is from the pen of a pious lawyer, when, descanting on "the drops of dew hanging from every blade of grass, and reflecting the rays of the sun in a thousand different directions," he says:—"Not a sound was heard, nor a leaf moved, whilst the secret operation was advancing: and what a pleasant emblem does this afford of the influences of the Holy Spirit. How mild, how gentle, how imperceptible have its effusions often been upon our minds!"

To return: it will be seen from what has gone before, that, when the clock is before the sun, the mornings are "dark" and the evenings "light;" and when the clock is after the sun, the mornings are "light," and the evenings "dark." In fact the "equation of time" causes such a variation of time between the clock and the sun, that, on two days of the year, of precisely the same length, the sun may rise half an hour earlier one day than on the other. See 1st of February and 10th of November.

In May and August the equation is reversed; but the variation being less, the phenomenon is of course not so striking.—*From a Correspondent.*

* See *Saturday Magazine*, Vol. XIV., p. 83; Vol. XV., p. 151.

Those that with diligence fight against poverty, though neither conquer till death makes it a drawn battle, expect not, but prevent, their craving of thee: for God forbid the heavens should never rain till the earth first opens her mouth; seeing some grounds will sooner burn than chap.—Fuller.

ON CHESS. XXIII.

THE KNIGHT'S MOVE, *(concluded.)*

WHEN the method of solving the problem of the knight's move, as stated in our last article, is thoroughly understood, the young chess student may pass on to that which constitutes the peculiar feature of Dr. Roget's method, and which confers on it that generality and comprehensiveness never before attained: viz., the power of *ending* as well as of beginning on any *given* square, provided, of course, that the two squares be of opposite colours. When the two given squares are named, the player must attentively notice to what systems they belong: whether both are in diamond systems or in squares, or one in a diamond and the other in a square: also, if both are diamonds, whether the two form parts of the *same* diamond system or not. The determination of these points will decide the mode of procedure. If the two squares belong to the same system, we must depart from one of the instructions given in the last article: we must not complete that system before passing to another, because one square belonging to it is to be the very last of the 64. We must therefore pass on to another system before completing the first one, and it is optional to leave as many as we please, to assist in forming links to conduct to the terminal square. Dr. Roget recommends that one or two squares of the system should be left to the last, but we incline to the opinion that it will be better to leave a greater number,—that is, after covering two or three squares of that system to which the initial square belongs, pass on to the other three systems successively, complete the 48 squares of which they consist, and then cover the remaining 13 or 14 squares of the first system. We will illustrate this by a problem. Required: to commence at the king's rook's square, and to terminate at the king's bishop's 6th square. These two squares belong to the same diamond system; consequently we must pass on to another system before completing this one. In the diagram (fig. 5) we begin at the rook's square, and cover only two squares of the diamond system to which it belongs: we then pass on to a square system, the 16 squares of which we complete; after this we traverse the 16 squares of the other diamond system, and then the 16 of the other square; finally, we cover the remaining 14 squares of the first diamond system, and end at the required position.

If the initial and terminal squares are respectively in the two diamond or the two square systems, another modification is required, arising from the circumstance that the knight cannot pass from one diamond system to the other, nor from one square system to the other. Let the initial square be in one diamond system, and the terminal square in the other. Complete the first diamond system; then one of the square systems; then traverse a *portion* of the second diamond system, omitting that square which is to be the terminal square, as well as some others; after this, cover the second square system; and lastly, traverse the remainder of the second diamond system, ending on the required one. By transposing the words "square" and "diamond" in this description, it will be available for that variety of the problem which begins in one square system and ends in the other.

If the initial square be in a diamond system and the terminal in a square one, or *vice versâ*, the solution is easier than in either of the cases before supposed; because all the four systems can be completely traversed in succession, by bearing in mind that the *second* system traversed must not be that which contains the terminal square.

We have endeavoured to impress on the mind of the reader, that attention to the respective *systems* in which the initial and terminal squares are contained, is the point of most importance in giving a general solution to the varieties of this problem. When this is once attended to, minor difficulties are more readily surmounted. Among these are, the quarter of the board on which the terminal square is situated. Not only must the tour of the knight, in a given problem, end in a particular system, but also in a particular quarter of the board; and as the tour may generally be made from left to right or from right to left at pleasure, we must choose that direction which, while it obeys the conditions of the problem as to systems, shall terminate in that quarter which contains the terminal square. We may illustrate this by referring again to fig. 5. The terminal square is in the right hand upper quarter. After covering 2 squares of the first diamond system, and then traversing the 48 squares which constitute the other three systems, we find the knight in the left hand upper quarter, only two squares distant from the terminal square; and as we have still 14 moves to make, we manage to go into all the other three quarters of the board before arriving at that one which contains the terminal square. In every instance, if the rules which we have given are attended to, and any difficulty arises towards the end of the tour, a reconsideration of a few of the last moves will enable the player to surmount the difficulty. The moves which it is in the power of the knight to make at any given moment, varying from one to eight in number, give such interminable variety to the modes of solution, that the judgment of the player must be exercised as to the choice of the mode of proceeding in each particular instance; but it is only in the last few moves that this judgment is particularly called for, provided the prescribed rules are attended to. Of the number of ways in which the problem can be solved no estimate has yet, as far as we are aware, been made; nor do we know of any means but actual trial by which it could be determined, since the regular arithmetical law of permutation will not here apply. If the squares of the board were numbered from 1 to 64, and these numbers were noted down in the order in which the knight moved, we have very little doubt that this order might be varied in more than a *million* different ways; there are $64 \times 32 = 2048$ modes of varying the initial and terminal squares alone; and in each mode the intermediate moves are susceptible of variation at almost every step of the process.

Such is the result to which Dr. Roget's extremely ingenious investigation enables us to arrive. Until his method appeared, no one, we believe, was able to insure a solution to the problem when both the initial and terminal squares were prescribed; except in the limited instance of a re-entering route, where the terminal square is a knight's move distant from the initial one. By the method which we have just endeavoured to explain, the problem can be solved whether the terminal square be far removed from the initial one, or contiguous to it; the only condition being, that the squares must be of different colours.

To shew the interesting variety of which this problem is susceptible, we will here give three additional representations, each of which possesses some peculiar property capable of being committed to memory: they are partly original, and partly altered from methods already known; and the whole of them differ from Dr. Roget's mode of solution. Fig. 6 is produced by attending carefully to this one simple rule:—*Keep as far from the centre of the board as possible.* In obedience to this direction, the tour of course commences in one corner, no matter which, and every successive move is determined according to the distances, from the centre of the board, to those squares open to the knight; the greatest distance being always chosen. It might appear from this rule, that the terminal square ought to be still nearer to the centre of the board than it is seen to be; but it will be found that in the course of the preceding moves, the four central squares have necessarily become occupied; since

Fig. 5

Fig. 6

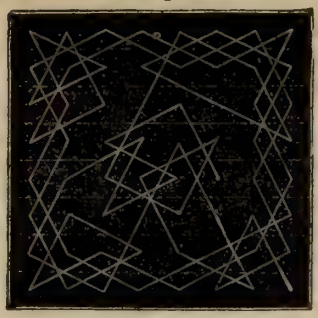
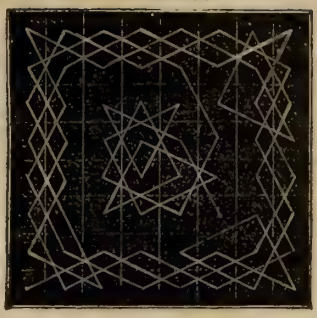


Fig. 7 (*a*).



t happens in some cases that there is only one square eft open to the knight, and that one may probably be ıear the centre of the board. No difficulty will occur, ›rovided we adhere strictly to the one rule laid down.

Fig. 7 is produced by adhering to the following rule: *Play the knight to that square where he has least ›ower.* Supposing the board to be unoccupied except ›y the knight, the reader can easily satisfy himself, that he knight can command 2, 3, 4, 6, or 8 squares, accordng to his position: if in one corner, he commands ›nly 2 squares; if he be on the knight's square, he ›ommands 3 squares; if on the bishop's square, 4 squares; nd as he approaches the centre, the squares commanded are 4, 6, or 8 in number. Now the rule requires, that in every instance the square chosen for the knight's leap be that which, of all those remaining open to the knight, will give him least power. If at any move there are two open squares of equal power in this respect, either one may be chosen. In many points this solution resembles the last, since, generally speaking, the knight has "least power" when "farthest in the centre;" but a comparison of the two figures produced will show that the routes are by no means identical.

Fig. 8 (*a*) is possessed of a most remarkable numerical property, and belongs to a class of problems which would be found fertile in interesting combinations. In order to exhibit this property, we have in a separate diagram or table, fig. 8 (*b*,) numbered the squares in the order in which the knight stepped on them. The tour commences on one of the central squares, which we have marked 1, and terminates on the king's bishop's third, which is therefore marked 64. Now it will be found, that if we select two squares on opposite sides of the centre, and equidistant from it, the *difference of the two numbers occupying those squares will be always equal to* 32. Thus, the opposite corner squares are 16 and 48, 27 and 59; and 48—16=59—27=32: the four central squares are 1 and 33, 14 and 46; and 33—1=46—14=32. In the same way we may select any two squares, provided the centre of the board is precisely

Fig. 8 (*a*).

Fig. 8 (*b*.)

48	55	4	29	10	53	6	27
3	30	49	54	5	28	11	52
56	47	32	9	50	13	26	7
31	2	57	46	33	8	51	12
44	19	40	1	14	25	34	63
39	58	45	18	41	64	15	24
20	43	60	37	22	17	62	35
59	38	21	42	61	36	23	16

Fig. 9 (*a*.)

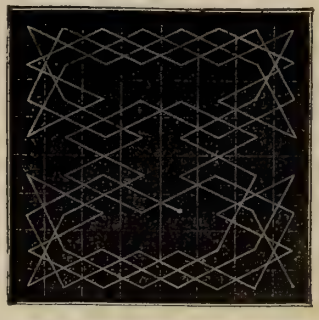


Fig. 9 (*b*.)

17	8	43	38	15	10	45	36
42	39	16	9	44	37	14	11
7	18	41	48	5	12	35	46
40	49	6	19	34	47	4	13
29	20	63	50	3	22	33	56
62	51	28	21	64	57	2	23
27	30	53	60	25	32	55	58
52	61	26	31	54	59	24	1

between them, and equidistant from them, and we shall find that the smaller number subtracted from the greater will invariably leave 32.

There are other remarkable circumstances connected with this last solution. The route is a re-entering or interminable one, and the figure produced, as seen in fig. 8 (*a*,) is one of the most symmetrical which we have yet given. The route being interminable, may be commenced on any square, and as the initial square must always be marked 1, the distribution of the numbers over the board would vary with the varying of the initial square, every square being affected alike. Now it will be found, that at whatever square the route commences the same numerical law will hold good; there will in fact be 128 modes of varying the order of the numbers, in all of which the same figure will be produced, and the same remarkable law will be observed; because any square out of the 64 may be selected as the initial square, and from each we may begin the route either to the left or the right.

Another example of the maintenance of a particular law throughout the numbers obtained, we will here give

in order to shew the reader how varied may be the results to which he can arrive by a little ingenuity. Fig. 9 (*a*,) is a very pleasing and symmetrical figure, produced by a route of which the numbers are entered in fig. 9 (*b*). If these numbers are examined, it will be found, that the difference of two numbers situated on opposite sides of the centre, and equidistant from it, is 16,—half the amount of constant difference in the last case. This route is not a re-entering one, and we do not think it could be made so, with a constant difference of 16.

The reader will now have had sufficient proof of the diversified solutions of which the knight's problem is susceptible. We have never heard of a chess kaleidoscope, but the instructions we have given will enable him to form one out of the numerous other modes of solution which may be left to his ingenuity to produce. Nor will the study of this subject be without its use to the chess-player; since it not only teaches the art of manœuvring this beautiful piece, but brings the fact into forcible notice, that the knight has less power of moving, and therefore becomes less valuable, when he approaches the corners and sides of the board.

SACRED LITERATURE.

DIVINITY and ethics are the centre round which the national literature of a great, a thoughtful, and enduring people, must ever revolve. The subject-matter of these sciences alone possesses an interest sufficiently steady and intense, to give birth and impart active purpose to great ideas. The literature which rests on taste and manners, is dependant for its charm on those peculiarities which gave it existence. The literature of mere sentiment springs up and perishes, annually, before the sated eye, like other sickly productions of the hot-bed. The literature of classical research is intelligible to few; and being deficient in applicability to the practical realities of life, is almost limited in value to the charm of an exquisite amusement. The pursuits of natural science, though in the highest degree useful and pleasant to man, as inhabiting the world of sense, regard merely his external accommodation, and, with their results, will disappear when "all these things shall be dissolved."

But the literature of divinity and ethics is liable to none of these objections. Rooted, not alone in the truth of things (which is the essential ground of all literature, worth the name), but in Deity itself, its pure themes are fit to be adorned, and never can they be exhausted, by the loftiest inspiration of genius. Not concerned in the external welfare only, and present interests, of mankind, but with men's inmost and immortal well-being, it has a practical value which cannot be over estimated. Making no severe demands upon intellect, no rarer qualification is needed for enjoying it, than ordinary sobriety of mind. Dependant on nothing fluctuating, it possesses equal charms for the wise and good of every period, age, and condition. Whatever is sublime in thought, may be met with in the pages of our sacred writers. Whatever is rich, powerful, noble in elocution, their high majestic themes demand, and have received from them. Whatever is strict in logic and cogent in argument finds here a place and application. Minds of the most various altitude and construction here expatiate in an apt and ample field. The abysmal simplicity of St. John, and the fervent ratiocinative energy of St. Paul,—the eloquence of Chrysostom, and the warmth of Augustine,—the affectionate sweetness of a Leighton, and the exhaustive vigour of a Barrow,—find here more than commensurate employment.

So attractive and absorbing, so high and central are the subjects which this department of literature presents, that all great writers, in proportion as they approach those altitudes of conception and expression, their being able to reach which, marks them great, rush into it, and become, at least for a time, moral and theological teachers. Shakspeare in his most earnest moments was a divine and moralist; Addison and Johnson were often professedly such; to the same sphere the genius of Wordsworth, and even sometimes of Scott,

Repairing, in their golden urns drew light.

Introductory Essay to Gems of Sacred Literature.

GARDEN HERBS.

TANSEY.

Tanacetum vulgaris, or common tansey, is a well-known native plant. It belongs to the Corymbiferous tribe of the natural order *Compositæ*, and is common in the banks, hedges and borders of fields in most parts of the middle of Europe, and very frequent in England. Linnæus enumerates eight species of this herb. The common yellow-blossom tansey, of which there are three varieties, is said to be a native of Britain. The English name of this plant is either an abbreviation of the Latin, or is derived from the French name, *Tanaise*.

This herb may often be seen growing in churchyards, and it is probable that it was once used as a funeral plant. Boerhaave informs us that the leaves intruded into the mouth and nostrils of a dead body preserve it from decay, and from the attacks of insects; whence the plant has been called *Athanasia*, or the immortal. It is also stated that if meat be rubbed over with tansey the flesh-fly will not deposit its eggs in it.

Tansey has a bitter taste, and an aromatic smell; it was formerly held in regard for warming and strengthening the stomach, for which reason the young leaves obtained a place among culinary herbs, their juice being used in puddings. In Gerard's time they made cakes of the young leaves in the spring mixed with eggs, which were called tansies; "these," he says, "be pleasant in taste and good for the stomache; for if any bad humours cleave thereunto, it doth perfectly concoct them and carry them off. The root preserved in honie or sugar, is an especial thing against the gout, if everie day for a certaine space, a reasonable quantitie thereof be eaten fasting." Boerhaave says: "This balsamic plant may supply the place of nutmegs and cinnamon. For I believe Asia does not afford a plant of greater fragrancy than tansey."

Notwithstanding this high praise, tansey is now but rarely used as a domestic vegetable; our habits, customs, and diet are not those of our forefathers, especially in those times when the season of Lent was strictly observed as a fast. It was then a common practice to make cakes at Easter, of flour, eggs, and the tender leaves of tansey, and these were not only greatly prized, but were thought necessary to be eaten at that season in particular, to relieve the stomach of the real or imaginary ills occasioned by a continued diet of fish and pulse. The custom of eating these cakes at Easter only is greatly censured by Culpeper:—

The world (says he) being overrun with popery, a monster called superstition perks up his head, and, as a judgment of God, obscures the bright beams of knowledge by his dismal looks; (physicians seeing the pope and his imps selfish began to be so too), and now, forsooth, tansies must be eaten only on Palm and Easter Sundays, and their neighbour days. At last, superstition being too hot to hold, and the selfishness of physicians walking in the clouds; after the friars and monks had made the people ignorant, the superstition of the time was found out by the virtue of the herb hidden, and now it is almost, if not altogether, left off. Surely our physicians are beholden to none so much as they are to monks and friars. For want of eating this herb in spring, makes people sickly in summer; and that makes work for the physician. If it be against any man or woman's conscience to eat tansey in the spring, I am as unwilling to burthen their conscience as I, am that they should burthen mine; they may boil it in wine and drink the decoction—it will work the same effect.

Tansey is perennial: it may be easily propagated by seed, and also by parting the roots in spring, and planting them in any sort of light soil or situation.

CHERVIL.

Sweet chervil, or sweet cicely, groweth very like the great hemlock, having large spread leaves cut into divers parts, but of a fresher green colour than the hemlock, tasting as sweet as the aniseed. The stalks rise up a yard high, or better, being cressed or hollow, having leaves at the joints,

but lesser; and at the tops of the branched stalks, umbels or tufts of white flowers; after which come large and long pressed black shining seed, pointed at both ends, tasting quick, yet sweet and pleasant. The root is great and white, growing deep in the ground, and spreading sundry long branches therein, in taste and smell stronger than the leaves or seeds, and continuing many years.

Such is the old Herbalist's description of *Chærophyllum sativum* (natural order *Umbelliferæ*), of botanists. This herb was called Χαιρεφυλλον by the Greeks, either from its numerous leaves, or as the old herbalists suppose from the joy and gladness which they affirm the leaves of this plant produced in those who ate them. The Romans adopted the same word, and called the herb *Chærophyllum*, and in most of the modern languages of Europe, the name of this vegetable is derived from the same source; the Dutch call it *Kervell*, the Germans *Korffol*, the Italians *Cerefoglio*, the French *du Cerfeuil*, and our oldest botanists write it *Cheruill*.

Chervil is a native of the Levant, and various parts of Europe, and is sometimes found in its native state in this country. When young it somewhat resembles parsley; but as it runs to seed, it bears more the appearance of hemlock. The tender leaves are grateful to the palate, especially when used in soups and salads. It is much cultivated by the French and Dutch, who are so fond of it, that they scarcely ever omit it in their soups and salads: and it is considered to be a milder and more agreeable addition to seasonings than the parsley, so generally used by English cooks. Gerard, about two hundred years ago, had an extensive garden in London, in that part of Holborn now called Hatton Garden, and in his *Herbal* he says:—"The great sweet cheruill groweth in my garden, and in the gardens of other men who have been diligent in these matters." He recommends the roots of this plant to be first boiled, and then eaten with oil and vinegar, "which is very good for old people that are dull and without courage; it reioiceth and comforteth the heart, and increaseth their strength."

We select from Mr. Rogers' *Vegetable Cultivator* the method of rearing this useful plant; Chervil is annual, and the seed should be sown to keep up a succession, from the beginning of March till June, at the intervals of about a month, as the younger it is the higher flavour it imparts.

The seed may be sown in shallow drills, from six to nine inches apart, and covered over lightly with the mould; it can also be sown broad-cast and raked in lightly and evenly. If the plants rise thick, a slight thinning will be necessary; and in dry weather a little water will be useful.

To have chervil for use throughout winter, it should be sown towards the end of August in a three or four foot bed, which may be hooped over and the plants protected with mats in frosty weather. The plants remain where sown, and are never transplanted. They are proper for gathering when the leaves are three or four inches in growth, and must be cut off close; they will shoot up again, and may be gathered in succession, though the plants of the spring and summer sowing soon spindle up into seed-stalks, ceasing to produce young leaves, which are the useful parts.

THE WATER-OUZEL.

Cinclus aquaticus.

The remarkable appearance and habits of this bird have excited much popular as well as scientific attention; and as it is very generally dispersed over Europe and capable of enduring all climates, so large a variety of names have been applied to it as frequently to embarrass the student who may desire from books to add to the knowledge gained by observation in the haunts of nature. In Wales this bird is the *Mwyalchen y dwfr;* in the Scotch Highlands the *Gobha uisge;* in England it is called the *Water ousel*, the *Dipper*, the *Penrith ouzel*, the *Water crake*, the *Water crow*, the *Water colly*, the *Bessy Ducker*, and some other names. The Scotch call it the *Water pyet*, the *Water craa*, &c.

The Water Ouzel belongs to the dentirostral division of Cuvier's great order Passeres, and to the thrush family in that order. The bird is dumpy in appearance, but full of energy and activity. The bill is slender, the head and the forehead low; the body is short and compact, the wings short and rounded; the tail is also short, but very thick and strong. Its plumage is thick and close, like that of aquatic birds, and though the bird remains long in the water its plumage does not become wet. The colour of the bird on the head, back, and sides, is deep brown; the rest of the upper part, black: the tail feathers and quills are also black; the throat and breast are white, shading off into reddish-brown towards the under parts, and gradually becoming deeper in hue towards the extremity of the tail: the bill is dark brown, and the feet yellowish-grey. The markings are nearly the same in both sexes. The markings in the young birds appear to be subject to variation.

The water ouzel loves to haunt the rocky wilds of almost any northern clime; it seems not to care for the vicissitudes of heat and cold, and provided it can be near water that is not frozen it is cheerful and happy. The deep and rugged channels worn by the mountain streams which dash on against opposing rocks, or amidst loose stones, are the favourite resorts of the water ouzel.

> . . . . . The bird
> Is here,—the solitary bird, that makes
> The rock his sole companion. Leafy vale,
> Green bower, and hedge-row fair, and garden rich
> With bud and bloom, delight him not;—he bends
> No spray, nor roams the wilderness of boughs,
> Where love and song detain a million wings,
> Through all the summer morn—the summer eve;—
> He has no fellowship with waving woods,—
> He joins not in their merry minstrelsy,—
> But flits from ledge to ledge, and through the day
> Sings to the Highland waterfall, that speaks
> To him in strains he loves, and lists
> For ever.—CARRINGTON.

The habits of the water ouzel are retiring: when it becomes observed by the traveller, it flits from stone to stone, chirping and appearing as if incapable of flight. If pursued it appears scarcely to make an effort to avoid capture, and yet it is seldom or never captured. The traveller, secure of his prey, gives chase; the bird is almost within reach; it flirts its tail, and every now and then jerks round, as if half astonished, half inviting.

So onward they fare (says the writer of the agreeable sketches of the *Feathered Tribes of the British Islands*) till they come to a bolder and tougher stratum, which has obstructed the stream, but at the same time given it fall and force to scoop out a pool below, which though it boils where the cascade plunges (or rather where it rises again), is placid compared with the brawlings that have been passed. The water merely laves a beach of clean pebbles, the rocks on the other side are "sky high," without footing even for a bird, and the *breast*, over which the water dashes, seems too high for a thing so hopping and badly-winged. The bird halts on the beach, and forward the traveller rushes, hat in hand, to the capture, but the wet stones are treacherous, endlong he falls, dips himself, and rising sees the hat which was to capture the bird, whirling round and round in the eddies. The bird too has vanished—it is "a sprite" to wile him into peril. But it soon "bobs" to the surface, at the lower end of the pool on the other side, with its feathers dry without any shaking of the water, and leaping first on one stone and then another, it descends the ravine with the same nonchalance that it ascended. To recover the hat is a much more arduous matter than to lose the bird, but that too may be accomplished with one of the long suckers of hazel, which grow from the tangled and gnarled stool on the bank, though if the hold be not taken warily, and kept carefully, there may be a second dipping—and yet no dipper to boast of.

The manner in which the water ouzel seeks its food is very remarkable, and does not seem to have been gene-

rally known until the communication of M. Hebert to the Count de Buffon excited the attention of naturalists.

I lay ambushed (says he) on the verge of the lake Mantua, in a hut formed of pine-branches and snow, where I patiently waited till a boat, which was rowing on the lake, should drive some wild ducks to the water's edge. I observed without being perceived: before me was a small inlet, the bottom of which gently shelved, and might be about two or three feet deep in the middle. A water ouzel stopped here more than an hour, and I had full leisure to view its manœuvres. It entered into the water, disappeared, and again emerged on the other side of the inlet, which it thus repeatedly forded. It traversed the whole of the bottom, and seemed not to have changed its element, and discovered no hesitation or reluctance in the immersion. However, I perceived several times, that as often as it waded deeper than the knee, it displayed its wings, and allowed them to hang to the ground. I remarked too that when I could discern it at the bottom of the water, it appeared enveloped with air, which gave it a brilliant surface, like some sorts of beetles, which are always in water, enclosed with a bubble of air. Its view in dropping its wings on entering the water might be to confine this air: it was certainly never without some, and it seemed to quiver: these singular habits of the water ouzel were unknown to all the sportsmen whom I talked with; and perhaps without the accident of the snow-hut I should have ever been ignorant of them; but I can aver that the bird came to my very feet, and, that I might observe it, I did not kill it.

The quivering motion of the wings spoken of in the above extract is simply an upward stroke tending to keep the body down, in opposition to any difference in gravity between the bird and an equal bulk of water. As soon as the bird enters the water it elevates its head and raises its wings, and thus depresses the body; and this is done so easily and so rapidly that the bird runs down the bank to the bottom of the stream with apparently no greater effort than would be required for simple motion on dry land. A moment's reflection will make it appear less wonderful that a bird should be able to remain beneath a fluid which, bulk for bulk, is heavier than itself, than to sustain itself in the air, which, bulk for bulk, is so very much lighter than itself. In flying, the bird sustains itself by the downward stroke of t e wings, and the water ouzel pursues its food in the water by adopting a process the very reverse of flying.

This bird feeds on water insects, larvæ, worms, dragon flies, water beetles, and most of the animal substances which occur in water. It delights in those little pools between the rapids where the trout deposits its spawn: this, as well as the spawn of the salmon, is a favourite food for the water ouzel and its young. When the banks are covered with snow, and most other birds are to a great extent deprived of the means of procuring food, the water ouzel, perched on a stone in the brook, sings to the tune of many waters, and fears nothing but ice, which locks up its source of food, and deprives it of its retreat from terrestrial dangers. But as soon as the ice has disappeared, it is again independent and happy. It is not often, however, that the bird is "frozen out," because it prefers the dells among the secondary hills near the low country, where springs occur which, breaking out from a considerable depth, seldom freeze, and in which the young of many little animals supply it with food.

The water ouzel breeds early in the season; the eggs are of a beautiful white, and not more than five in number. The young birds are of quick growth; they are great feeders and are constantly chirping after food in the absence of their parents. The building of the nest is begun early in the season; it is constructed with much labour, and is formed on the outside generally of moss, which is kept green by the moisture of the place, so that it has the appearance of a natural mossy tuft: it is lined with such dry leaves or fibres as the place affords: it is covered with a sort of dome, and has an opening in the side. The situation of the nest is often under a projecting stone in a hole of the rock, or even in a hole in a wall, provided the situation be sufficiently retired and near the water. The structure of the nest, however, is differently described by different naturalists, and it may vary according to local circumstances. Mr. Rennie speaks of having found a nest of this bird at Sorn Cleugh, in Ayrshire, which he describes as a romantic spot, where thickly-wooded rocks of variegated sandstone rise for several hundred feet on each side of a small brook, approaching in some parts so near that the sunbeams cannot reach the channel below. By the side of a large block of sandstone, which had fallen into the stream from the over-hanging cliff, in one of those darkened corners, a pair of water ouzels had built their nest. The block in its fall had dragged down with it an old moss-grown hazel, whose roots were plentifully clothed with lady-fern, sweet woodroof, and a profusion of green moss. These convenient materials were employed by the birds for the frame-work of their fabric, which was neatly arched over with a withered fern-leaf, and over this was placed a warm coating of green moss with a few chips of the woodroof. The lining was of similar materials, but of finer quality and more smoothly arranged. It was so near the edge of the stream, that it must have been overflowed, had a flood occurred, as is not unusual from its vicinity to the Clomfort range of hills. The water ouzel is said by Bewick sometimes to nestle behind a waterfall, when it overshoots a steep rock, and thus leaves a vacant space; and Mr. Rennie's observation seems to confirm the statement; for he has "watched a pair of these birds flitting stealthily out and in from such a locality at a small linn in the moors above Wemyss Bay, Refrewshire;" but the force of the falling stream prevented him from getting sufficiently near to discover the nest.

Montagu discovered one of these nests under a small wooden bridge in Caermarthenshire: the nest was built with hay, fibres and moss, and lined with dry oak leaves. The nest was captured, but within a fortnight another was constructed in the same place: this was also taken; a third was constructed, and we regret to add that the persevering little architects were a third time plundered. The same naturalist gives another example of a nest which he found in a steep mossy bank projecting over a rivulet; and from the facility with which moss could be procured, the nest so closely resembled a portion of the bank, that it could not have been discovered but for the parent birds being observed carrying in fish to their young.

The water ouzel sings only during the early part of the year: its summer note is but a mere chirp.

The cheerful bird that loves the stream
And the stream's voice, and answers, in like strains,
Murmuring deliciously.

LONDON:
JOHN WILLIAM PARKER, WEST STRAND
PUBLISHED IN WEEKLY NUMBERS, PRICE ONE PENNY, AND IN MONTHLY PARTS, PRICE SIXPENCE.
Sold by all Booksellers and Newsvenders in the Kingdom.

THE

Saturday Magazine.

No. 605. DECEMBER 4TH, 1841. { PRICE ONE PENNY.

THE MARKET-CART, BY GAINSBOROUGH.

GAINSBOROUGH AND HIS WORKS. II.

LIKE the Dutch artists, Gainsborough was devoted to the representation of the rural features of his own country. His figures, mostly those of country people, are in general conspicuous objects in his pictures. In the National Gallery are his two well-known pictures, the "Watering-Place" and the "Market Cart." The former represents in the foreground a piece of still water, at which some cows are drinking, and children playing among rocks, with tall trees overshadowing. The feeling of rural tranquillity is well preserved in this picture: the subject, though simple, is well calculated to exhibit the skill and character of the artist; and the effect results mainly from the contrast of bright lights and deep shadows. The tone of colouring is, however, by some thought to be heavy, and the details not well made out.

An idea of the second picture, the "Market Cart," may be conveyed by the frontispiece to our present article. We see a road overgrown with bushy trees; two country girls are seated upon a cart, loaded with turnips and other vegetables; two lads are walking, and other figures enliven the back-ground. The tone of this picture is highly rich and harmonious. According to Dr. Waagen,—

It pleases the eye by a warmth of colouring which is peculiar to Gainsborough, yet the tone of the figures is very false, the handling affected and slight, the colouring much broken. What a difference between such a picture and an old Dutch one,—for instance, an Isaac Ostade treating a similar subject! How pithy and solid is his execution! how rounded and accurately characterized every individual object, yet without neglecting the harmony of the whole.

We are, however, inclined to think that there is more justice in the general remarks of Sir Joshua Reynolds, who says:—

A novelty and peculiarity of manner, as it is often a cause of our approbation, so likewise it is often a ground of censure; as being contrary to the practice of other painters, in whose manner we have been initiated, and in whose favour we have perhaps been prepossessed from our infancy, for, fond as we are of novelty, we are upon the whole creatures of habit. However, it is certain that all those odd scratches and marks, which on a close examination, are so observable in Gainsborough's pictures, and which even to experienced painters appear rather the effect of accident than design this chaos, this uncouth and shapeless appearance, by a kind of magic, at a certain distance assumes form, and all the parts seem to drop into their proper places, so that we can hardly refuse acknowledging the full effect of diligence, under the appearance of chance and hasty negligence. That Gainsborough himself considered this peculiarity in his manner, and the power it possesses of exciting surprise, as a beauty in his works, I think may be inferred from the eager desire which we know he always expressed, that his pictures at the Exhibition should be seen near as well as at a distance.

Before resuming our memoir of his life we will distinctly notice one other painting of Gainsborough, and that a remarkable one: it is entitled "the Blue Boy." This is the portrait of a youth in a blue dress, and it is now in the gallery of the Marquis of Westminster. It has a natural elevation of look, and great ease of attitude, but the cerulean splendour of the boy's coat is at first somewhat startling. This picture owed its origin to a dispute between Gainsborough and other artists. Gainsborough's object was practically to disprove the opinion of Sir Joshua Reynolds,—that the predominance of blue in a picture was incompatible with good colouring; and in spite of the blue dress, our artist succeeded in producing a harmonious and pleasing effect. "And in truth there are," says Waagen, "in the cool shades of colours in which blue acts the chief part, very tender and pleasing harmonies, which, however, Sir Joshua, with his way of seeing, could not much approve. The Blue Boy is besides greatly distinguished for spirit and careful solid painting."

Reynolds used to say that Gainsborough could copy Van Dyck so exquisitely that at a certain distance the copy could not be distinguished from the original, or any difference be observed between them. He thought Gainsborough's manner to be peculiarly his own, and one which produced great force and effect: one day, while examining a picture of his with considerable attention, he said, "I cannot make out how he produces his effect."

As Gainsborough's circumstances improved, he felt himself enabled to indulge his peculiar tastes. He was not greatly attached to reading, but considered himself to be well read in the volume of nature, and that that was learning sufficient for him. He did not therefore much covet the intercourse of literary men, but yet he was fond of company, and passionately so of music. He esteemed a good musician as one of the first of men, and a good instrument as one of the noblest works of human skill. He in consequence devoted much of his leisure to fiddles and rebecs: he collected numerous instruments, and received at his table musical professors of all descriptions, except bagpipers. He admired Giardini and his violin,—Abel and his viol-de-gamba,—Fischer and his hautboy, and was delighted with a strolling harper who came from the Welsh mountains to Bath. Music was with him at all times a favourite topic of conversation, and during his leisure he practised by fits and starts on his numerous instruments, and his performance is said to have been worthy of praise.

One of Gainsborough's acquaintances in Bath was Wiltshere, the public carrier, a kind and worthy man, who loved the artist and admired his works. In one of his landscapes the painter wished to introduce a horse, and as the carrier had a very handsome one, he requested the loan of it for a day or two, and named his purpose: the carrier saddled and bridled it, and sent it as a present. Upon this the artist painted the wagon and horses of the friendly carrier, put his whole family and himself into it, and sent it well framed to Wiltshere, with his best respects. This picture is considered to be a capital performance. While our artist resided in Bath, but exhibited his pictures in London, Wiltshere was annually employed in the removal of his paintings, and constantly refused to accept money for his services, but being a great lover of the art, he would ask and obtain a small picture of the painter, according to the amount of carriage performed. Several of these pictures still remain in the family of the carrier, and their value is justly appreciated.

When settled in London, Gainsborough engaged in portraiture and landscape painting with fresh feeling and increasing success. He had a fine house and gallery in Pall Mall, and, though Sir Joshua was then high in favour, yet there was room for another, who, to just delineation of character, added a force and a freedom which approached, and sometimes rivalled, Van Dyck. The splendour of his colours was permanent, and to all his performances he imparted an air of truth.

A conversation or family piece of the king, the queen and the three royal sisters, was much admired, as also were some sketches of the Duchess of Devonshire; but Gainsborough declined to send to Chatsworth a painting of her Grace, because he felt that "her dazzling beauty and the sense which he entertained of the charms of her looks and her conversation, took away that readiness of hand and hasty happiness of touch which belonged to him in his ordinary moments."

Gainsborough never attached his name to any of his productions, and very seldom the date. One of his own chief favourite compositions was the "Cottage Girl with her Dog and Pitcher," which is, as Cunningham remarks, a happy and well-considered scene.

Such a picture is well calculated to illustrate the following spirited observations of the above-named writer:—

The chief works of Gainsborough are not what is usually called landscape, for he had no wish to create gardens of paradise, and leave them to the sole enjoyment of the sun and breeze. The wildest nooks of his woods have their living tenants, and in all his glades and his valleys we see the sons and daughters of men. A deep human sympathy unites us with his pencil, and this is not lessened because all its works are stamped with the image of Old England. His paintings have a national look. He belongs to no school; he is not reflected from the glass of man, but from that of nature. He has not steeped his landscapes in the atmosphere of Italy, like Wilson, nor borrowed the postures of his portraits from the old masters, like Reynolds. No academy schooled down into uniformity and imitation the truly English and intrepid spirit of Gainsborough.

Gainsborough lived to the age of sixty-one. Being present at the trial of Warren Hastings, he was sitting with his back to an open window, when he suddenly felt something very cold touch his neck; stiffness, and pain succeeded. On returning home, a mark was seen about the size of a shilling, which was harder to the touch than the surrounding skin, and which he said still felt cold. The use of flannel did not avail to remove it. The most eminent surgeons, however, and John Hunter among them, declared there was no danger. It turned out however, according to the presentiment of the artist himself, to be a cancer, which proved fatal. On his death-bed he sent for Reynolds to thank him for the kind and liberal manner in which he had always spoken of him in public and in private. This was the more pleasing because it was generally known that professional jealousies had existed between these artists. In a Discourse pronounced soon after the death of his rival, Reynolds thus refers to the occasion:—

I cannot prevail on myself to suppress, that I was not connected with him by any habits of familiarity: if any little jealousies had subsisted between us, they were forgotten in those moments of sincerity; and he turned towards me as one who was engrossed by the same pursuits, and who deserved his good opinion, by being sensible of his excellence. Without entering into a detail of what passed at this last interview, the impression of it upon my mind was, that his regret at losing life, was principally the regret of leaving his art; and more especially as he now began, he said, to see what his deficiencies were: which he said, he flattered himself in his last works were in some measure supplied.

These remarks on the dying artist's state of mind may teach us that whatever we allow to become the first object in life will assuredly cling to us even on the threshold of eternity; and it is therefore necessary to make the inquiry, even with respect to our most innocent and laudable pursuits, whether they are not usurping a place in our thoughts and affections, which as immortal and responsible creatures we cannot safely assign to them.

Gainsborough was buried on the 9th of August, 1788, in Kew Church-yard; according to his expressed wish his name alone was cut on the tomb-stone. Sir Joshua Reynolds, Sir William Chambers, West, Meyers, Bartolozzi, Paul Sandby, Cotes, Sheridan and others attended his funeral.

We have already expressed regret that the biography of this great artist is so meagre. There are, however, many details respecting him preserved in the fourteenth Discourse of Sir Joshua Reynolds, which must be peculiarly valuable to the student, not only as affording him the character of this master from one so well qualified to pronounce it, but also as revealing some of the methods of working whereby Gainsborough produced such charming effects. For the general reader a few extracts from this Discourse will suffice: the student will do well to study the Discourse itself.

In the early part of this performance occurs the following remarkable passage, which is alike honourable to him who uttered it and to him who is the subject of it, and which our subsequent experience in art has fully confirmed.

If ever this nation should produce genius sufficient to acquire to us the honourable distinction of an English school, the name of Gainsborough will be transmitted to posterity, in the history of the art, among the very first of that rising name.

Comparing Gainsborough with certain masters of the Roman school, he says:—

For my own part I confess I take more interest in, and am more captivated with the powerful impression of nature, which Gainsborough exhibited in his portraits and in his landscapes, and the interesting simplicity and elegance of his little ordinary beggar children, than with any of the works of that school, since the time of Andrea Sacchi, or perhaps we may say Carlo Maratti,—two painters who may truly be said to be Ultimi Romanorum.

And then, anticipating the surprise with which this bold opinion was likely at that time to be received, he adds:—

I am well aware how much I lay myself open to the censure and ridicule of the academical professors of other nations in preferring the humble attempts of Gainsborough to the works of those regular graduates in the great historical style. But we have the sanction of all mankind in preferring genius in a lower rank of art, to feebleness and insipidity in the highest.

Among the causes which led Gainsborough to the attainment of such high excellence, Sir Joshua states the fundamental one to be

The love which he had to his art, to which indeed his whole mind appears to have been devoted, and to which everything was referred; and this we may fairly conclude from various circumstances of his life, which were known to his intimate friends. Among others he had a habit of continually remarking to those who happened to be about him, whatever peculiarity of countenance, whatever accidental combination of figure, or happy effects of light and shadow occurred in prospects, in the sky, in walking the streets, or in company. If, in his walks, he found a character that he liked, and whose attendance was to be obtained, he ordered him to his house: from the fields he brought into his painting-room stumps of trees, weeds, and animals of various kinds, and designed them, not from memory, but immediately from the objects. He even framed a kind of model of landscapes on his table, composed of broken stones, dried herbs, and pieces of looking-glass, which he magnified and improved into rocks, trees, and water. How far this latter practice may be useful in giving hints the professors of landscape can best determine. Like every other technical practice, it seems to me wholly to depend on the general talent of him who uses it.

Another illustration of his great affection for his art was his custom of painting by night, since he could not amuse himself in the evening by any other means (not even by music) so agreeable to himself.

I am indeed (says Sir Joshua) much inclined to believe that it is a practice very advantageous and improving to an artist, for by this means he will acquire a new and a higher perception of what is great and beautiful in nature. By candle-light not only objects appear more beautiful, but from their being in a greater breadth of light and shadow, as well as having a greater breadth and uniformity of colour, nature appears in a higher style, and even the flesh seems to take a higher and richer tone of colour.

There is something sublime in the impression produced upon a contemplative mind, passing from hall to hall, and gallery to gallery, of a museum filled with the noblest objects of human genius, wrested from the oblivion of long departed years. As you enter each apartment, a new era in the history of the world seems to dawn upon you—and you find yourself surrounded with the most illustrious beings, by whose genius and whose actions it was distinguished and adorned. Centuries there dwindle into hours and minutes—you pass from age to age as you move from room to room—and in the lounge of a morning, you seem to have communed with the greatest characters that have appeared upon the busy theatre of the ancient world. Instead of days, months and years might be devoted to the examination of such interesting objects, and, after all, the eye of the connoisseur, and the mind of the Christian philosopher, would discover new beauties, and suggest fresh trains of thought.

OPTICAL ILLUSIONS IX.

ON BINOCULAR VISION, (*concluded.*)

IN describing the very interesting experiments of Mr. Wheatstone on the subject of binocular vision, we have given some of the figures by which he illustrates the truth of the principles which he was the first to unfold. We may now give a few others, from which it will be evident that an almost interminable number might be produced. They are arranged in pairs, each pair consisting of two *monocular* pictures, as Mr. Wheatstone very conveniently terms them; that is, pictures as seen by one eye only; one picture of each pair representing the appearance which a certain solid body would present to the right eye; the other, the appearance presented to the left. These pairs, when placed in the stereoscope, produce a combined image, in which the idea of relief is strongly impressed on the mind. In fig. 6 (*a*) the

Fig. 6. (*a*).

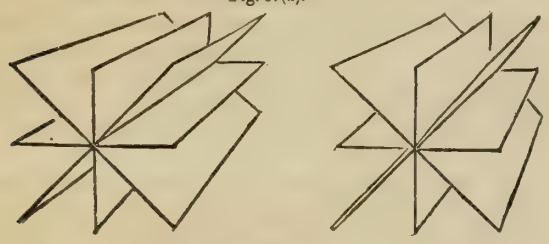


Fig. 6 (*b*).

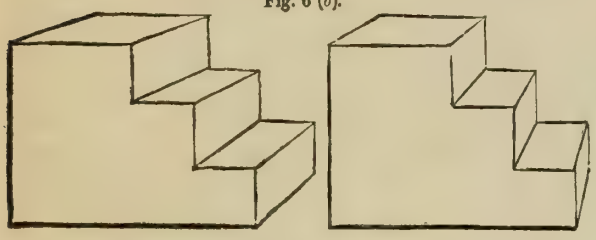
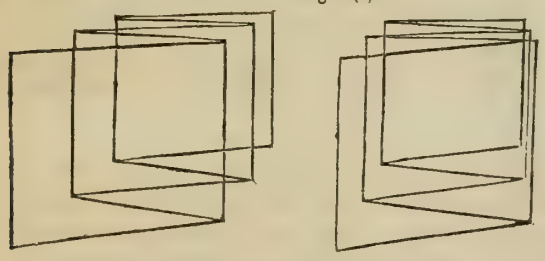


Fig. 7 (*a*).



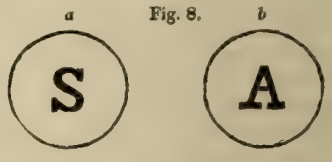
eight leaves or fans appear really to stand out in relief; so do the steps in fig. 6 (*b*); the five leaves or plates in fig. 7 (*a*); and the small tower in fig. 7 (*b*).

The results of the experiments made by aid of the stereoscope prove that if two pictures of similar size, and differing from each other only in the same degree as objects differ in their appearance to the two eyes, be viewed in the way described in our last paper, they will produce an image apparently in relief. But in order to embrace other varieties of the question, it may be asked, "What would result if the pictures were of different magnitudes?" and "What would result if they were of different forms?" Mr. Wheatstone gives the results of his investigations of these two points.

First as regards the difference of magnitude. If two squares or circles, differing a little in size, be drawn on two separate pieces of paper, and placed in the stereoscope, so that the reflected image of each shall be equally distant from the eye by which it is regarded, it will be seen that they coalesce, and produce a single image, notwithstanding the difference of size in the pictures. This experiment shows that the difference of size does not render the result discordant with those before given, but it leaves untouched the question as to what relation exists between the size of the resultant image and that of each of the pictures. This comparison may be made by placing the two drawings side by side on a plane before the eyes, and making the optic axes converge to a point either nearer or farther than the plane in which the pictures are placed: the two pictures and their binocular image being thus all brought into a line, it is found that the latter is midway in size between the other two. It is justly remarked by Mr. Wheatstone, that were it not for this binocular coalescence of two unequal images, we could never see objects clearly except when looking immediately forward; for when we look obliquely towards either side, say the right, the left eye is at that moment farther from the object than the right eye is, and consequently recognises it as being smaller in size; yet the resultant image is clearly defined, in consequence of the law just detailed.

With regard to the effect of placing two pictures of different *forms* before the two eyes, Mr. Wheatstone arrived at a very curious result, and one which seems to open an extensive field for inquiry. If two small pictures, such as *a* and *b*, fig. 8, be placed, one in each half

Fig. 8.



of the stereoscope, it might be supposed that the resultant image would be a kind of confused superposition of the one on the other; but this is not the case. The common circular border remains constant as a circle, but the letter within it changes alternately from that which would be perceived by the right eye alone to that which would be perceived by the left eye alone. At the moment of change the letter which has just been seen breaks up into fragments, while fragments of the letter which is about to appear mingle with them, and are immediately after replaced by the entire letter. It does not appear to be in the power of the will to determine the appearance of either of the letters; but the duration of the appearance seems to depend on causes which are under our control. Thus, if the two pictures be equally illuminated the alternations appear in general of equal duration, but if one picture be more illuminated than the other, that which is less so will be perceived during a shorter time.

The circumstance for which this last mentioned experiment may be deemed important, is that it corroborates certain experiments made by other philosophers on the subject of colour. It is known that if blue and yellow fragments or powders be mixed, a green colour will result; that orange results from a mixture of red and yellow, &c.; and it has been supposed by some that if one eye gazed upon a red colour while the other gazed upon yellow, or one upon blue and the other upon yellow, that the mind would appreciate in the one case an orange tint, and in the other a green, the component colours being individually lost in the blending of the two. M. de la Tour made an experiment on this point, by placing a blue disc before the right eye, and a yellow one before the left; but instead of the green tint which would appear if these two colours had mingled before their arrival at a single eye, he perceived the two colours distinctly and separately, one or the other alternately predominating either partially or wholly over the disc. Mr. Wheatstone states the result in an exactly similar manner; and it would be a very interesting question to determine, whether *other* eyes see the phenomena in the same manner. It is known that great differences exist in the power of vision, in the appreciation of colour, in the symmetrical position of the optical axes of the two eyes, &c., and it often happens that many of the results obtained by experiments are a good deal influenced by these circumstances. Could this point be definitely settled, it

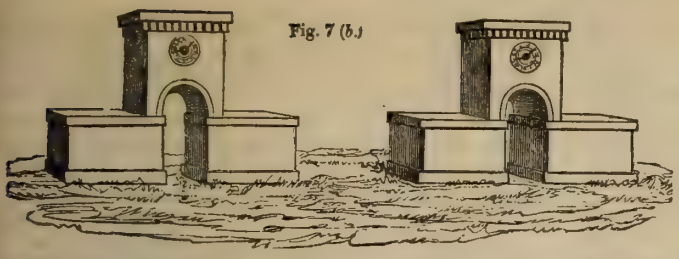


Fig. 7 (*b*.)

might lead to important results, for the theory seems to show that the mind does not and cannot appreciate two images at once, as presented in the two eyes, but alternates rapidly from the appreciation of the one to that of the other.

As the experiments with the stereoscope snow that there is an essential difference in the appearance of objects when seen with two eyes, or when only one eye is employed, and that the most vivid belief in the solidity of an object of three dimensions arises from two different perspective projections of it being simultaneously presented to the mind, it may be asked, how do persons, who see with *one* eye, avoid mistaking a picture for a solid object, and how do those who are accustomed to see with two eyes, avoid mistake when they close one eye? Mr. Wheatstone answers these questions thus.—Although the simultaneous vision of two dissimilar pictures suggests the relief of objects in the most vivid manner, yet there are other signs which suggest the same ideas to the mind, which, though more ambiguous than the former, become less liable to lead the judgment astray in proportion to the extent of our previous experience. The vividness of relief, arising from the projection of two dissimilar pictures, one on each retina, becomes less and less, as the object is seen at a greater distance before the eyes, and entirely ceases when it is so distant that the optic axes are parallel while regarding it. We see with both eyes all objects beyond this distance precisely as we see near objects with a single eye; for the pictures on the two retinæ are then exactly similar, and the mind appreciates no difference whether two identical pictures fall on corresponding parts of the two retinæ, or whether one eye is impressed with only one of these pictures. A person deprived of the sight of one eye sees therefore all external objects near and remote, as a person with both eyes sees remote objects only; but the vivid effect arising from binocular vision of near objects is not perceived by the former: to supply this deficiency he has recourse unconsciously to other means of acquiring more accurate information; of which the principal is the motion of the head. The manner in which the movement of the head furnishes this collateral evidence is thus explained:—The mind associates with the idea of a solid object every different projection of it which experience has hitherto afforded; a single projection may be ambiguous, from its being also one of the projections of a picture, or of a different solid object; but when different projections of the same object are successively presented, they cannot all belong to another object, and the form to which they belong is completely characterized. While the object remains fixed, at every movement of the head it is viewed from a different point of sight, and the picture on the retina consequently continually changes.

The reader will remember, that in one of our former papers on optical illusions, we described the appearance which a hollow cavity, such as the interior of a shallow vessel, or an intaglio, or seal, presents when viewed under particular circumstances; it appears to the eye to be convex instead of concave; a seal or intaglio appearing to have been converted into a cameo. We explained that this apparent change or illusion is brought about principally by the mode in which light and shadow are distributed over the object; but Mr. Wheatstone attributes the effect partly to circumstances which have already been explained in these papers.

There are other branches of this interesting and extensive subject, into which Mr. Wheatstone partly enters; but as he gives us ground for hope that he will at some future period publish the results of further experiments thereon, we will not here present those features which are as yet imperfect. We will, therefore take leave, till some future time, of these important contributions to the physiology of vision.

We cannot refrain from expressing a hope that the reader will repeat all these interesting and instructive experiments. The stereoscope is an instrument which may be easily and cheaply constructed. For all ordinary purposes the screw might be dispensed with and a lateral movement given to the flaps E E′, fig. 4 (*a*), by means of hinges. The various figures must be drawn accurately and neatly on drawing-paper or card; the right-hand figure on one piece, and the left-hand figure on another. Should the young student find any difficulty in procuring the two little mirrors, let him purchase two pieces of plate glass of the required size, and silver them himself according to the following simple directions, which we borrow from Mr. Tomlinson's *Student's Manual of Natural Philosophy*.

To construct a *plane* mirror,—procure a piece of plate-glass, and polish it until perfectly clean. Then cut out a piece of tin foil of the exact size of the glass: let the foil be quite smooth and free from wrinkles and holes. Place it on any smooth and level surface, and cover it with a layer of clean mercury: then having gently smoothed the surface of the mercury, by means of a piece of cotton wool, or a hare's foot, the under surface of the mercury will combine with the foil; the upper surface being brilliant and reflective. Then place a piece of stout paper of greater extent than the intended mirror upon this amalgam; and lay the glass upon the paper exactly over the amalgam. Press firmly upon the glass; and draw out the paper in a steady equable manner: this will exclude the air from between the amalgam and the under surface of the glass. The glass will thus be evenly coated with the amalgam, and a plane mirror will be formed; which must not be taken up directly; but left under pressure of a heavy weight for a few hours, during which time the surface on which the mirror rests should be gradually sloped in order that all superfluous mercury may drain off.

Manchoo Tartary

Is tributary to both China and Japan, but dependent on the latter The men are athletic, tall, and jealous of their women, and the country not unlike parts of the western coast of Scotland. They live chiefly on vegetables, varied at times by puppy's flesh; in many of the houses we found these little creatures fattening for their fate; for, although they have plenty of bullocks, they employ them only for agricultural purposes; and all through China and along this coast, milk, a principal article of diet among European peasantry, is not used. We remarked that the Chinese at Chusan laughed immoderately at our soldiers milking the goats, as they think it unnatural that man should drink the milk of animals. However, the Tartars to the westward are said by travellers to live almost entirely on the milk obtained from the camel; so this must be a prejudice which the people of Manchoo have derived from the Chinese.

We found the most useful articles of barter here were the brass buttons on a naval jacket, the worth of one being estimated far higher than a Spanish dollar, of which they did not seem at first to comprehend the value; for a button, kindly furnished me from the jacket of a friend, I became the owner of a sheep and some poultry, and, I suspect, both purchaser and seller were equally proud of their ability at barter.

Their houses are much the same as in China, but the mode of cultivating the land must be here laborious. All the hills are terraced to the summit, on account of the severe rains to which they are subject, and which often sweep the whole side of a hill into the valley below. Traces of these devastations meet the sight on every side, showing how necessary is the precaution.—*Six Months with the Chinese Expedition.*

ON SHOOTING STARS.

FOR some years past a periodical phenomenon has occurred on the 9th and 10th of August, and still more strikingly on the 12th and 13th of November, to which the attention of astronomers and meteorologists has been drawn in a marked degree, viz., the appearance of a very large number of meteors or shooting-stars.

What these shooting stars are we are little able to surmise. Aërolites, fire-balls, shooting-stars, and other phenomena of somewhat analogous kinds, have attracted attention from early ages, and numerous theories have been advanced to account for their formation. Soon after Franklin made known his researches in electricity, an opinion was formed that shooting-stars were due to some electrical action going on in the atmosphere. Afterwards Chladni, a celebrated German philosopher, conceived that the origin, both of those bodies which actually fell to the earth, and of those which merely appeared luminous in the heavens, might be accounted for in some such way as the following: that these meteors are masses of matter, moving through space with velocities equal to those of the planets; that when they encounter the earth's atmosphere they become inflamed by the resistance and friction, and thence rendered luminous; and that some of them burst into pieces, and scatter masses of stone and iron on the ground. This theory was ridiculed by some and supported by others, but attention was not so strongly drawn to the subject until it was observed that the luminous meteors appeared in greater abundance about the dates above mentioned than at any other periods of the year.

Sir William Hamilton, after describing an eruption of Vesuvius, which took place on the 9th of August, 1779, spoke of a phenomenon which occurred in the following night.

It was universally remarked (said he) that the air this night, for many hours after the irruption, was filled with meteors, such as are vulgarly called falling-stars. They shot generally in a horizontal direction, leaving a luminous train behind them, but which quickly disappeared. The night was remarkably fine, starlight, and without a cloud. This kind of electrical fire seemed to be harmless, and never to reach the ground, whereas that with which the black volcanic cloud of last night was pregnant appeared mischievous, like that which attends a severe thunderstorm.

Professor Quetelet, of Brussels, has collected numerous proofs of similar phenomena having occurred within the last few years, on the 9th and 10th of August. Similar exhibitions have taken place during the first week in August, but the 9th and 10th seem to be the most conspicuous days. At a meeting of the Astronomical Society about two years ago, Professor Schumacher gave an account of some August meteors which he had observed in conjunction with several other astronomers, and other scientific bodies have received numerous communications of a similar kind.

But the November meteors are still more numerous than those of August. The first recorded observations of which we are aware is that of the 11th of November, 1799, when Humboldt and Bompland observed many thousands of shooting-stars within a few hours, at Cumana, in South America, and in the same night similar meteors were observed by different persons throughout almost the entire extent of America, as well as in some parts of Europe. On the 12th of November, 1832, philosophers in every part of Europe saw numerous displays of these bodies, but the following year, 1833, presented a phenomenon which surpassed everything previously seen. From the accounts which Professor Olmsted gave of what he saw on the 12th of November in that year, at a place in North America, M. Arago computed the number of meteors on that night at not much less than a quarter of a million! In the years 1834, 1835, 1836, and 1838, similar exhibitions, more or less extensive, have been noticed in many parts of the world; but it has been stated that 1839 and 1840 were not so prolific in them.

Before giving an outline of the theories which have been offered in explanation of these phenomena, it may be well to state what is known respecting their height and velocity.

No experiments seem to have been made for the determination of the height and velocity of shooting-stars until the year 1798, when Brandes and Benzenberg, two German astronomers, undertook a series of observations for this purpose. Having selected a line, about nine miles in length, they stationed themselves at its extremities, and began to observe on nights previously agreed on. When a meteor was seen they immediately traced its apparent path on a celestial map, noticing carefully the exact times of its appearance and extinction, with any other circumstances likely to assist in identifying it. Several of the meteors were sufficiently identified to make it certain that they were seen by both parties, and the recorded results, when worked out by the aid of trigonometry, gave tolerable indications of the heights and velocities of the meteors. Of twenty-two computations thus obtained, it was found that one gave the height of the meteor about 6 English miles above the surface of the earth; six others were between 6 and 45 miles high; nine were between 45 and 90 miles; and six were above 90 miles, one being as much as 140. With respect to velocities there were only two observations which could be depended on, one of which gave a velocity of about 21 miles, and the other 25 miles per second,—a velocity exceeding that of the earth. It was noticed as a remarkable circumstance, and one deserving of attention in reference to any theories on the subject, that one of the meteors moved *upwards*, or away from the earth.

About the year 1823 another attempt, on a more extensive scale, was made to measure the heights and velocities of meteors. The German observer, Brandes, assisted by several other persons, made a series of observations, from April to October, 1823, in Breslau and the neighbouring towns. During this interval more than eighteen hundred shooting-stars were observed by some or other of the parties, but only about a hundred of these were observed simultaneously at different places, so as to afford the means of computing the heights and velocities. Of these meteors, the altitudes of four were computed to be under 15 miles; fifteen were between 15 and 30 miles; twenty-two were between 30 and 45 miles; thirty-five were between 45 and 70 miles; thirteen were between 70 and 90 miles; and eleven were above 90 miles. The four highest had altitudes of 140, 220, 280, and 460 miles, respectively. Of those meteors whose directions of motion was sufficiently determined it was found that twenty-six had a motion downwards, nine upwards, and one horizontal. With respect to the velocities with which they move, only three computations were made which could be depended on, and these gave velocities of 23, 28, and 37, miles in a second, respectively,—all being greater than the velocity of the earth in its orbit.

In 1824 M. Quetelet made a similar series of observations in Belgium; the results of which gave, as the velocity of the various meteors which he measured, from 10 to 25 miles, the mean being a little less than the velocity of the earth in her orbit. In August, 1838, M. Wartmann, and several assistants, made an extensive series of observations of a similar kind in Switzerland. Some of the observers stationed themselves at Geneva, while the others were stationed at Planchettes, a villa at about sixty miles distant. On the 10th of August, in the space of about seven hours and a half, nearly four hundred meteors were observed at Geneva; while those at Planchettes observed rather more than a hundred; and from a comparison of the two sets of observations, it was found that the average of height of those which had

been observed at both stations was more than 500 miles; while the velocities attained the startling amount of 240 miles in a second.

Such are the results of the observations which have been made on the heights and velocities of these meteors; and we next speak of the theories which have been framed to account for them. Mr. Galloway, in a paper read before the Astronomical Society a few months ago, divides these theories into five classes, and states some of the objections which may be urged against each.

1. Benzenberg, and some other observers, suppose that shooting stars and fire-balls are substances projected from volcanoes in the moon. If a body were projected vertically from the surface of the moon with a veloc ty five times greater than that of a cannon-ball, it is capable of calculation, on the theory of gravitation, that the projectile would reach a point in space where the earth's attraction is stronger than the moon's, and would consequently then fall to the earth. Benzenberg, in accordance with this theory, supposes that shooting stars are small masses of stone, from one to five feet in diameter; which are projected from lunar volcanoes, and instead of falling on the surface of the earth, are whirled round it in a kind of orbit. The objections to this theory are the extraordinary numbers which appear at intervals, and the *periodicity* of the August and November meteors.

2. The second theory, proposed by Dr. Olbers, is, that the shooting-stars are the *débris* or fragments of a large planet, burst into pieces by some internal explosion, and of which the asteroïds, Pallas, Ceres, Juno, and Vesta are the principal remaining portions. These small fragments he supposes to circulate about the sun in very elongated orbits; and that when they approach the region of space through which the earth is moving, they enter the earth's atmosphere, and by reason of the resistance and friction are rendered luminous, whereby they present to us somewhat the appearance of stars.

3. M. Biot supposes that these meteors have a close connection with the zodiacal light. This is a lens-shaped portion of the heavens which presents a slightly luminous or nebulous appearance, similar to that called the "milky way." It is objected to this theory, that as the earth passes obliquely through the plane of this zodiacal light, it must vary in its distance therefrom, and that therefore the shooting-stars ought to present very different appearances at different times; whereas, they are nearly alike all the year through, although more plentiful at some periods than others.

4. Arago and many other astronomers suppose that independently of the great planets, there exist in the planetary regions myriads of small bodies which circulate about the sun, generally in groups or zones; and that one of these zones intercepts the ecliptic about the place through which the earth passes in November. It would appear from a letter which Sir John Herschell sent to the Athenæum Journal a few weeks ago, that he coincides in this opinion so far as relates to the August meteors. He says:—"The meteors of August 9, 1840, in so far as I observed them, radiated almost without exception from a point in the heavens very near the star γ (gamma) in the constellation Perseus: which is almost coincident w th the point (near the star B Camelopardali) from which I observed them to emanate on the 10th of August, 1839." Facts of this nature appear almost decisive in favour of the opinion, that a zone or zones of these bodies revolve about the sun, and are intersected by the earth in its annual revolution.

Mr. Galloway adduces five classes of objections to this hypothesis. First.—That bodies moving in groups in this way, would necessarily move in the same direction, and consequently, when they become visible from the earth, they would all appear to emanate from one point, and move towards the opposite; whereas shooting-stars are observed on the same nights to emanate from all points of the heavens, and to move in all possible directions. Secondly.—The average velocity at which these shooting-stars seem to move greatly exceeds that which any body circulating about the sun can have at the distance of the earth. Thirdly.—From the luminous train which they generally leave behind them; from their being situated within the earth's shadow, and at heights far exceeding those at which the atmosphere can be supposed capable of supporting combustion, it follows that their light, instead of being reflected from the sun, is self-supported, contrary to every analogy of the solar system. Fourthly.—If the shooting-stars be solid matter, passing within a few hundred miles of the earth, many of them would inevitably be attracted to it; which has never yet been known to occur. Lastly.—Some of the shooting-stars are seen to move in a path inclining upwards; a fact which is difficult to reconcile with the theory.

5. The last theory to which we shall allude is, that advanced by Capocci of Naples. He supposes the Aurora Borealis, shooting-stars, aërolites, and comets, to have a common origin, and to be due to the aggregation of atoms of matter, brought into unison by magnetic action. He supposes, that in the planetary spaces there exist bands or zones of nebulous particles, more or less fine, and endued with magnetic forces, which the earth traverses in its annual revolution; that the smallest and most impalpable of these particles are occasionally precipitated on the magnetic poles of our globe, and form polar auroras; that the particles a degree larger, in which the force of gravitation begins to be manifested, are attracted by the earth, and appear as shooting-stars: that the particles in a more advanced state of concretion give rise in like manner to the phenomena of fire-balls, aërolites, &c.; that the comets, which are known to have very small masses, are nothing else than the largest of the aërolites, which in course of time collect a sufficient quantity of matter to be visible from the earth.

It will be seen from these details that the present state of our knowledge is inadequate to explain the subject of shooting stars. Our ignorance of a subject is often well displayed by the many conflicting theories which accompany it; but we are generally so anxious to explain, that time is not allowed to collect materials necessary to an explanation. Probably many years of accurate observation will be necessary to form a consistent theory on a subject which has only just begun to be included among the *periodical* phenomena of nature.

GARDEN-HERBS. XI.

Hyssop.

Dioscorides, that gave so many rules for the knowledge of simples, hath left Hyssop (*Hyssopus Arabum*,) altogether without description, as being a plant so well known that it needed none: whose example I follow. A second kind of hyssop (*H. arabum flore rubro*,) is like the common hyssop, and differeth in that, that this hyssop hath his small and slender branches decked with fair red flowers. A third kind (*H. albis floribus*,) differeth only in having flowers as white as snow. The fourth kind (*H. tenuifolia*) is of all the rest of the greatest beauty; it hath a woody root, tough, and full of strings, from which rise up small, tough, and slender flexible stalks, whereupon do grow infinite numbers of small fennel-like leaves much resembling those of the smallest grass, of a pleasant smell and aromatic taste, like unto the rest of the hyssops, but much sweeter; at the top of the stalks do grow among the leaves small hollow flowers of a bluish colour tending to purple. We have in England in our gardens another kind like unto the former, but the leaves are some of them white, some green, as the other, and some green and white, mixed and spotted, very goodly to behold. Of which kind we have moreover in our gardens another sort, whose leaves are wonderfully curled, rough and hairy, growing thick thrust together, making as it were a tuft of leaves; in taste and smell, and in all other things like unto the common hyssop.—Gerard.

Hyssop has nearly the same name in most European languages, and is derived from the Hebrew word *ezub*,

which has been variously translated; but its most probable signification is a holy herb, or herb for purifying holy places. At the institution of the Passover, Moses commanded the Israelites to take a bunch of hyssop, and dip it in the blood of a lamb, and to sprinkle the lintel and the door-posts. (Exodus xii. 22.) It was also used by the priest at the cleansing of persons afflicted with leprosy, as well as for purifying the house of the leper. (Leviticus xiv. 4, 49, and 52.) These, and other passages of Scripture, do not refer to the plant which now bears the name of hyssop. A modern authority is of opinion that the hyssop of Scripture is the *Phytolacca decandra*, or that it belonged to the genus in which this plant occurs. The length and straightness of the stem are characteristic of the various kinds of phytolacca, and afford an obvious reason why the Roman soldier placed a sponge filled with vinegar upon hyssop in order to raise it to the lips of our Saviour. (John xix. 29.) The *Phytolacca decandra* and other species of the genus, contain a considerable quantity of potash, so that a hundred pounds of its ashes afford forty-two of the caustic alkali; hence, an illustration is afforded of the passage in Psalm li.,—"Purge me with hyssop, and I shall be clean."

The accompanying cut and description we borrow from the *Bible Cyclopædia*:—

The phytolacca belongs to the family *Chenopodeæ*, in which the barilla plant is found, but it is unlike the rest of its congeners in the extreme beauty of its flowers, and the berries by which they are succeeded. These flowers are generally of a fresh and lively pink, disposed in elegant clusters. The berries are compounded of a circle of carpella, or minute fruits closely joined together. The leaves are generally smooth, and neatly shaped, and the stem is long, smooth, and wand-like. It usually rises to about a foot and a half in height, but in Palestine it sometimes exceeds two feet.

Burder says,—

Salmasius, cited by Wolfius, proves that there was a species of hyssop whose stalk was sometimes two feet long, which was sufficient to reach a person on a cross, that was by no means so lofty as some erroneously imagine.

Some authors have imagined that the hyssop of Scripture is the shrub which we call Winter Savory: but this opinion is contradicted by Pliny, who gives an account of savory and another distinct account of hyssop: he says that the best hyssop grew on Mount Taurus in Cilicia, and next to that the hyssop of Pamphylia was most esteemed. He describes it as a herb not friendly to the stomach. The Romans used it with figs as an aperient, and with honey as an emetic: and a plaster formed from it was thought to be a remedy for the sting of serpents. Five sprigs of hyssop, and two sprigs of rue, boiled with three figs are recommended by him as an excellent drink to relieve the chest.

Aiton notices three species of hyssop and four varieties of the common sort, the earliest of which was cultivated in England in 1548. The species of hedge hyssop noticed by this author are exotics; but as early as the year 1590, Gerard states that he found the broad-leafed hedge hyssop growing wild:—

It groweth in moist places. I found it growing upon the bog or marrish ground, at the further end of Hampstead Heath, and upon the same heath towards London, neere unto the head of the springs that were digged for water to be conveied to London, 1590, attempted by that careful citizen Sir John Hart, Knight, Lord Maior of the Citie of London: at which time myself was in his Lordship's company, and viewing for my pleasure the same goodly springs, I found the said plant not heretofore remembered.

Mr. Henry Phillips has collected a number of authorities to show the high estimation in which hyssop was held during the palmy days of the herbalists Dodoens wrote much on the medical virtues of this herb; he recommends a decoction of this plant with figs, rue and honey, boiled together, as good for the complaints of the chest, shortness of breath, and hard dry coughs: when given with figs he says it is an excellent vermifuge, and is an admirable gargle for the mouth and throat. He states also that hyssop boiled in vinegar, and held in the mouth, eases the tooth-ache; and that the decoction removes congealed blood occasioned by bruises, and takes off the black or blue marks. Later authors have greatly commended it in cases of bruises; it may be applied either as a cataplasm, or a little bundle of the plant put into linen rag and applied to the part. Ray gives an account from Mr. Boyle of a violent contusion from a kick of a horse which was happily cured by this herb, boiled and applied as a cataplasm. He says, that the violent pain was almost instantly removed, and the very mark and blackness taken off in a few hours. It is probable, however, that in modern practice a simple fomentation of water would be thought as effectual as any medicated preparation of the herbalists.

Riolanus the elder speaks of the efficacy of hyssop in sugillations* of the eyes:—

I found by experience (says that physician,) the truth of what Archigenes affirms, in Galen, which is, that if the tops of hyssop be tied up in a cloth, and boiled in water, and the cloth afterwards applied warm to the livid eye, the blood will be attracted by the hyssop to such a degree as to stain the linen. Upon this authority I have, several times, prescribed a decoction of hyssop against sugillations, even of the eyes; only, instead of water, I sometimes ordered the bag to be boiled in wine; and directing the application of it somewhat warm to the eye-lids, when the patient went to bed, his eyes being shut, the lividness was removed as well as I could wish.

Phytolacca decandra.

* This word is expressive of the black and blue marks produced on the body by strokes. It is derived from the Latin *sugillare*.

Lloyd, in his *State Worthies*, gives the following account of Sir Edward Coke:—"His parts were admirable; he had a deep judgment, faithful memory, active fancy. And the jewel of his mind was put into a fair case,—a beautiful body with a comely countenance;—a case, which he did wipe and keep clean, delighting in good clothes, well worn, and being wont to say, that the outward neatness of our bodies might be a monitor of purity to our souls."

LONDON:
JOHN WILLIAM PARKER, WEST STRAND.
Published in Weekly Numbers, price One Penny, and in Monthly Parts, price Sixpence.
Sold by all Booksellers and Newsvenders in the Kingdom.

THE

Saturday Magazine.

No. 607. DECEMBER 18TH, 1841 { PRICE ONE PENNY

TURKEY AND THE TURKISH PROVINCES.

GREEK RIES, OR CAPTAIN.

THE ARCHIPELAGO, AND ITS MARINERS.

At the eastern extremity of the Mediterranean a very remarkable arm of the sea bends towards the north; remarkable as forming the maritime separation between Europe and Asia; as being the channel by which Constantinople and the Black Sea are reached; as being studded with a vast number of islands; and as having been in Europe, almost the birthplace of civilization. This is the Ægean Sea; and the islands which stud it form collectively the Grecian Archipelago.

If we examine a map of this region, we see that the whole western shore of Asia Minor bounds it on the east; that some of the Turkish provinces bound it on the north; and that Greece—anciently independent, then under the yoke of the Turks, and now independent again,—forms its western boundary. This portion of sea is about four hundred miles from north to south, and two hundred from east to west. The islands, which are so numerous that they have never been accurately counted, lie scattered over nearly the whole of this sea; some are beautifully fertile and picturesque, producing wine, oil, gums, raisins, figs, silk, honey, wax, oranges, lemons, cotton, &c.; while others are mere barren masses of rock. Of these islands, those whose names are best known to general readers are Samos, Scio, Lemnos, Mitylene, Patmos, Cos, Naxos, Paros, Antiparos, Milo, and Argentiera.

The inhabitants of these islands are a fine, hardy, athletic race, generally good sailors. Their dress consists of a short jacket and waistcoat, without a collar, very full breeches, with a red sash round the waist, a small red cap fitting close to the crown of the head, and shoes resembling our slippers. The legs and throats are generally bare; they wear moustaches, but never beards; and the hair is make to hang back over the neck to a great length. The women are generally beautiful, and their dress simple; when not employed in their household occupations, their time is chiefly taken up with spinning, knitting, and weaving.

It is, however, in a maritime point of view that we are about to consider this singular region. The islands being very small, the inhabitants on each are few in number; and as they are obliged to depend a good deal on each other, it results that much intercourse is maintained from island to island. The Greeks of the Levant have thus become good sailors; and form the principal part of the crews in the Turkish as well as the Greek vessels. Among the vessels here employed, one which is found in that corner of the Archipelago leading to the Black Sea, is the *caique*, a small kind of sloop, with sails, and a few rowers. These caiques are long, narrow, boats, extremely light, and provided with one, two, or three small sails, which are set only in fair weather, or when the wind is not too strong. They are not provided

with ballast, and are so buoyant that a somewhat stiff breeze would overset them, if the boatman did not take care to let go the sail on the smallest danger and to turn the boat by shifting the helm. The caiques belonging to the Sultan are remarkable for their size, their elegance, and the number and dexterity of the rowers; these latter are twenty-eight in number, and are dressed in white.

The vessels that go greater distances are, of course, of larger size, and are better provided with sails. We cannot perhaps better illustrate the nature of such a vessel and of its crew than by following the narrative of a traveller in these seas. Some years ago, Mr. Turner, an Englishman, left Constantinople to go to Syria in a small Turkish vessel, passing through the Archipelago in his way. The vessel was about a hundred tons burden, and was loaded with a cargo of olives and nuts belonging to a merchant of Candia named Tussein Ago. The captain of the vessel was what Mr. Turner calls a *sans souci*, with a most extraordinary face, having one eye, one nostril, and one moustachio at least half an inch higher than the other; he was called captain, simply from the boat being his; he had no command over his men, for he had not the slightest idea of manœuvring a ship. The crew were twelve in number, of whom four, who were Turks, were very inefficient seamen; and the other eight were intelligent and active Greeks. The passengers consisted of about thirty persons, comprising two or three English gentlemen, two Frenchmen, the Candiote merchant and his brother, and several Turks and Greeks. Among them was a very devout Turk, who regularly performed his ablutions and prayers five times a day, and every evening, taking an hour-glass in his hand, sang a prayer for favourable weather, in the chorus of which he was joined by all the other Mohammedans. The Turkish passengers paid from forty to fifty piastres each, for their passage from Constantinople to Cyprus; the Englishmen paid much higher, under an agreement to be provided with board, which proved to be of the sorriest kind. On the day after they started, Mr. Turner was astonished to see all the sails still up, notwithstanding a gale was blowing, which to most seamen would have been a hint to "furl." He represented the danger, but all in vain; for they were excessively angry at his remonstrances, which they said would bring misfortunes upon them, for, "if they were destined to perish, all precautions would be in vain:"—this is an example of the power of the notion of fatalism on the Turkish character. On the same evening a dispute arose among the Turkish passengers:—the merchant Tussein, on account of the cold, wanted to perform his ablutions in warm water; but this the Turkish devotee would not allow to be lawful, insisting that there was no instance on record of Mohammed having so acted. Tussein retorted on the devotee, that he had been praying sitting, which he asserted was not consistent with their religion; but the devotee replied, that he had only done so that evening during the gale, when the ship rolled so that he could not stand on the deck, and that in this case there was a special permission granted to Mohammedans at sea to pray sitting:—thus the dispute ended.

The party landed occasionally at the islands which they passed, visiting the objects most worthy of notice, and then embarking again to proceed on their voyage. The instances of superstition and ignorance which they met with in the crew and passengers were many, and some of them ludicrous; but we will only allude to one or two which relate to navigation, and which obtain great credit among the Turkish seamen. The English travellers having one evening sought to relieve the tedium of the voyage by a game at cards, Tussein came into the cabin and begged them to desist, urging that some misfortune would else surely happen to the ship; and to induce them to believe him, he related a story of what had once happened to himself:—He was once detained at Rhodes twenty-eight days by contrary winds, during which he amused himself by playing cards with the crews of some other ships. The captain, much vexed at the delay, at length said he was sure there must be some cause for the contrary winds; and going down to search the cabin, he found the cards, which he flung overboard in a great rage. Immediately the wind became fair, and they had a very prosperous voyage to Alexandria; but the other ships, three in number, whose crews had not thrown away their cards, were all taken by an enemy's squadron;—that the cards were the cause of the contrariety of the wind, Tussein stoutly maintained. A day or two afterwards, while sailing round a cape, a sudden gust of wind disturbed the equilibrium of the vessel, and also of an old Turkish passenger, who immediately railed against the Englishmen, and said that it was occasioned by their drinking rum, and not performing ablutions after meals.

Mr. Turner states that in the Greek boats trading about the Archipelago, the sailors receive no fixed pay from the captain, who is always the owner of the boat; the captain takes half the profit or freight, on account of the boat being his, and of his being obliged to keep it in repair at his own expense; he then divides the other half with his comrades, taking two shares for himself. For instance, a boat manned by four men, including the captain, has gained one hundred piastres clear, after deducting the expense of provisioning; the captain first takes fifty, which he lays aside to pay for the repairs of the boat when necessary; he then out of the remaining fifty takes twenty, and gives ten a-piece to his three men. In the Idriote vessels, the captain (when owner), after supplying provisions, and paying all expenses, takes half the profit for the ship, and then divides the remainder among himself and the crew, taking two shares for himself, giving two to the boatswain, two to the *scrivano*, or supercargo, one and a half to the cook, and one to each man.

We will now accompany another traveller, Mr. Emerson, in a voyage among the islands of the Archipelago. This gentleman, in his *Letters from the Ægean*, says:—

There is more intense excitement in sailing by night in the Levant than in any other sea I have ever passed over. There are a thousand possible dangers from sudden squalls, and pirates, and sunken rocks, that keep the imagination on a continued stretch: then the softened azure of the midnight sky is so pure and placid, and its little twinkling stars are so sparklingly reflected in the deep dark sea beneath them; and if, as is seldom the case, it be a night of clouds and darkness, there will follow in the wake of the vessel a long line of phosphorescent light, which heaves and glitters like a stream of lava, till it again subsides into dimness and repose.

Mr. Emerson, after visiting Smyrna, engaged a passage from thence on board a brig, commanded by a Greek, named Panagies Androcopoulo. The vessel proceeded slowly on its voyage, now stopping to let the passengers enjoy the beautiful scenery on shore, now stopping for want of wind to move onwards: sometimes she narrowly escaped being captured by the Greek pirates which infest these seas, and at other times met with small vessels from which sponge-divers were carrying on their hazardous occupation. The captain bore down upon almost every island they came to, in accordance with the arrangement entered into with his passengers; but even without such arrangements, the captains of these small passage-vessels are accustomed to do so, seldom remaining more than eight and forty hours at a time at sea. In this part of the Mediterranean islands are so frequent, that the navigation seems rather inland than at sea. One cluster of islands is never lost sight of till another appears; and as the seamen who traffic from port to port form numerous acquaintances at each, a trip through the Archipelago is, to a Greek, merely a succession of visits to old friends, since he only parts with one in the morning to sup with another at night. This circumstance has a singular effect on the navigation of these parts, for the reis, or captain,

does not trouble himself much about charts or log-books, observations or bearings: his vessel is to him as much a yacht as a merchant-vessel, and his voyage as much one of pleasure as one of business. This tendency in the Greek sailors to land, for enjoyment's sake, whenever an opportunity offers, has been humorously alluded to by a modern writer:—

A merchant, who, sailing from Greece to Trieste,
Grew vexed with the crew, and avowedly testy,
Because, as he said, being lazy and Greeks,
They were always for putting in harbours and creeks,
And instead of conveying him quick with his lading,
(As any men would who had due sense of trading,)
Could never come near a green isle with a spring,
But smack they went to it like birds on the wing.

After going to Rhodes and some other islands, Mr. Emerson made a further passage, in a small brig-of-war, of eighteen guns, which had formerly been employed by the Greek merchants to carry wheat to Spain and France, but had afterwards exchanged her grain for guns. Her cabin was high and roomy, built of unpainted fir, hung with arms and amber pipes, and surrounded by a divan, on which the captain and his second officer were wont to take their coffee and smoke their chibouques. The ship's company were a set of good-humoured but idle fellows; whose time was chiefly spent in sleeping, singing, or playing cards; and they would lie for hours together under the shadow of a sail, laughing and shouting over their favourite game of casino. Navigation appeared to be very little understood by the captain or his officer, for the cruizes of the vessel were such as seldom kept it far distant from land.

By confining our attention, however, exclusively to the smaller maritime enterprises of the inhabitants of these islands, we scarcely do justice to the Greek seamen. Their general merits as mariners will be better understood from the following extract from a writer on this subject:—

The Greeks are universally addicted to commerce, and their marine is in many respects highly important. The islanders form the most enterprising portion of the nation, and carry on a petty trade in numberless half-decked boats, with high stems and sterns, and one thick short mast, with a long yard. They perform these voyages even as far as Constantinople and Smyrna, without chart or compass, and merely, as of old, by the observation of coasts and headlands. But they are acquainted with the management of the largest vessels of European construction, and besides navigating the Ottoman navy as seamen, they have large merchant-ships of their own, which trade as far as America and the West Indies, and make an occasional voyage to England. The natives of Hydra particularly, the most expert of the Greek mariners, have accumulated great wealth by their commerce, and have purchased from the Turks the independent election of their own magistrates. The number of Greek mariners actually employed at sea, is supposed to be not less than fifty thousand, and they are considered as capable of being trained to any kind of naval service.

With certain modifications resulting from the change in the relations between the Greeks and the Turks, the above account would be applicable in our own day.

If the stroke of War
Fell certain on the guilty head, none else—
If they that make the cause might taste the effect,
And drink themselves the bitter cup they mix;
Then might the Bard, the Child of Peace, delight
To twine fresh wreaths around the Conqueror's brow;
Or haply strike his high-toned harp, to swell
The trumpet's martial sound, and bid them on
When Justice arms for vengeance; but, alas!
That undistinguishing and deathful storm
Beats heaviest on the exposed and innocent;
And they that stir its fury, while it raves,
Safe and at distance, send their mandates forth
Unto the mortal ministers that wait
To do their bidding! CROWE.

OLD ENGLISH NAVIGATORS.

WILLOUGHBY, CHANCELOR, AND BURROUGHS.

II.

WHEN Richard Chancelor parted from his commander he seems to have gone on considerably to the north, for he speaks of having arrived at a place, where was perpetual daylight,—"a continual light and brightness of the sun, shining clearly upon the great and mighty sea." He must, however, have taken an easterly, and then a southern direction, before many days; for he succeeded without difficulty in reaching Wardhuys, where he waited for a considerable time for his companions; after which, disregarding the alarming reports of perils that would beset his farther progress, he pushed on gallantly towards his mysterious destination. The adventurers were guided to the entrance of an immense bay, which was no other than the White Sea, as yet unknown to Western Europe. They espied a little fishing-boat, the crew of which, having never seen a vessel of such a comparatively vast size as the Edward Bonadventure, took the alarm and fled at full speed. Chancelor, with his party, pursued and overtook them; whereupon they fell flat on the ground, half dead, crying for mercy. He kindly raised them; and by looks, gestures, and gifts, expressed the most kind intentions Being then allowed to depart, they reported everywhere "the singular gentlenesse and courtisie of the strangers;" so that the natives came in crowds, and the sailors were well supplied with provisions and everything they wanted.

After inquiring on what part of the world they had been thrown, our navigators found that they were at the extremity of a vast country, but imperfectly known in Europe by the name of Russia or Muscovy, and then under the absolute rule of a sovereign named Ivan Vasilovitch, who held his court at Moscow, which was 1500 miles distant, and could only be reached by sledges over the snow. Chancelor sought, and obtained, permission to visit the capital. He was favourably received by the czar, and his able agency laid the foundation of that commercial intercourse, which has since subsisted with little interruption between England and Russia.

We are told that the English navigators were astonished at the pomp and magnificence of the Russian court. The czar behaved at first in a reserved and stately manner towards the strangers; but at another interview conversed more familiarly with them. "The prince called them to his table, to receive each a cup from his hand to drinke, and took into his hand Master George Killingworthes beard, which reached over the table, and pleasantly delivered it to the metropolitan, who, seeming to bless it, said in Russ, 'This is God's gift;' as indeed at that time it was not only thick, broad, and yellow coulered, but in length five foot and two inches of assize."

In the following spring, Chancelor sailed from Archangel, and arrived safely in England, bringing with him a letter from the czar to Edward VI. This letter expressed a cordial desire to open an intercourse with England, and to grant to the Company of Merchants-Adventurers every privilege necessary to enable them to carry on traffic in his kingdom.

Thus the expedition had failed in its immediate object, besides the disastrous loss of Willoughby and his associates; but the prospect of establishing a trade with an extensive empire served as some compensation. A new charter was granted to the Society of Merchants-Adventurers, who assumed the title of "The Muscovy Company." Chancelor was sent out again, with credentials from Philip and Mary, and commissioned to treat with the czar of Muscovy, respecting the commercial privileges and immunities which his majesty might be pleased to grant to the newly-chartered company. The original object, however, of a passage to India by

the pole, eastward, was still kept in view. The adventurers were instructed not merely to seek for commercial gain, but also to increase their geographical knowledge, and "to use all wayes and meanes possible to learne howe men maye pass from Russia, either by land or by sea, to Cathaia*."

But, before this expedition could produce its effects, another vessel was fitted up in 1556, the Searchthrift, and placed under the command of Stephen Burroughs, who, on the first voyage, had acted as master of Chancelor's vessel. The sole and express destination of this vessel was, the eastern passage by the pole to India. There was as much enthusiasm and hope upon this as upon the first occasion. Cabot came down to Gravesend with a large party of ladies and gentlemen; and having first gone on board, and partaken of such cheer as the vessel afforded, invited Burroughs and his company to a splendid banquet at the sign of the Christopher. After dinner, a dance being proposed, the venerable pilot, as Burroughs tells us in his journal, "for very joy that he had to see the towardness of our intended discovery, entered into the dance himselfe, amongst the rest of the young and lusty company."

Burroughs set sail from Gravesend on the 29th of April; but did not arrive at the islands and straits of Waygatz, between Nova Zembla and the continent, before the middle of July. The crew were very much alarmed by the monstrous pieces of ice, which they saw floating about, and often became so entangled with them, that they could with difficulty avoid one mass without striking upon another. At one time a huge whale came so close to the ship, that they might have thrust a sword into him; but the commander, fearing lest the monster should overset the vessel, caused the men to shout with all their might, as Nearchus had done many ages before in the Arabian sea. The like effect was produced in both cases: this mighty animal, which is neither ferocious nor very courageous, plunged into the depths with an astounding noise.

Our navigators here fell in with a Russian sail. From their commander, Loshak, they learnt that the country about there belonged to the wild Samoiedes, who were described as cannibals, and worshippers of idols. Burroughs saw in one place more than three hundred of their idols, of the rudest workmanship ever beheld. They consisted of figures of men, women, and children, badly carved, with the eyes, mouths, and other parts stained with blood. These barbarians had no houses; but lived in tents made of deer-skins. Our navigators in all probability found the inhabitants of the polar islands and of the north of Asia, very similar to the occupants of these regions at the present day.

We have a curious story handed down to us of a scene witnessed by Johnson, one of the companions of Burroughs, among the Samoiedes at the mouth of the Pechora, a river at the north-east of European Russia. It is represented as a scene of magic incantation, performed by one of the great northern wizards, who live by deluding the borderers of the Arctic circle.

The magician first took a great sieve, something like a drum; then he began to sing, as people in England halloo, whoop, and shout after the hounds; to which the people present responded with—"*Igha, igha, igha!*" The conjuror at length fell into convulsions, and dropped down as if dead, though his breathing could still be heard. When Johnson asked the meaning of all this, he was told,—"Now doth our god tell him what we shall do!" After he had remained thus for a short time, the people began to cry "*Aghao, aghao!*"—upon which he arose, and again began to sing. Then he took a sword, and thrust it through his body, so that it entered at the breast, and came out at the back. We are told that Johnson saw it go into the shirt before, and issue out at the shirt behind; but it does not appear that its actual passage was very narrowly scrutinized, which is quite sufficient to shew that the spectators were imposed upon. The magician then sat down with a vessel of hot water before him, and a line or rope of deer-skin wound round his body; over all of which, as well as himself, a large cloth mantle was spread. The ends of the line being left outside of the mantle, were drawn tight by two men in opposite directions, till something was heard falling into the vessel. Johnson was horrified at being informed that this was the magician's head, shoulder, and left arm, severed from the body by the violent pulling of the rope. When Johnson asked leave to lift the cloak, and view this sad spectacle, he was informed that no one could do so and live. After the multitude had sung and hallooed for some time, the mantle was lifted up, and the conjuror came forth perfectly entire; all the parts cut asunder being understood to have been miraculously replaced. How far soever this gross and obvious imposture succeeded in deluding Johnson, it seems to have had an unlimited effect with the credulous and ignorant natives.

Our sailors had passed fifteen leagues beyond the mouth of the Pechora, and were nearing Nova Zembla, when the advanced season of the year prevented them from penetrating any further. Among other causes are mentioned the hindrance from the north and north-easterly winds, which seemed to the commander more powerful than in any other place; the immense quantity of ice, which seemed likely to be still further accumulated; the nights waxing dark, and winter with all its storms beginning to draw on. On these grounds it was decided to return, and winter at Colmogro; in order to resume their eastward navigation with the ensuing spring: but, in consequence of other employment, this design was not carried into effect, and the vessel returned to England in the succeeding year.

In the mean while Chancelor had proceeded on his mission to Archangel and to Moscow, where affairs had been well and prosperously carried on. The czar, Ivan Vasilovitch, sent back with Chancelor, Osep Nepea Gregorowitch, the regal ambassador and orator, as he was termed, with four ships heavily laden with furs, wax, train-oil, and other Russian commodities, to the value of upwards of 20,000*l.*, which belonged partly to the merchants, and partly to the orator. But the homeward voyage was most calamitous: two of the vessels were wrecked on the coast of Norway; a third reached the Thames; but the Edward Bonadventure, in which were the principal persons of the expedition, was driven by the storm into the bay of Pitsligo, on the north-east of Scotland, where it went entirely to pieces. Chancelor endeavoured, in a very dark night, to convey himself and the ambassador ashore in a boat. This boat was overwhelmed by the tempest, and Chancelor was drowned, together with most of his crew: the ambassador, however, by great good fortune succeeded in reaching the land. He was conducted to London with great pomp, where he was honourably treated by the English government; and the commercial relations of England and Russia were established on a closer and more solid basis.

These polar voyages were now suspended for a while, in consequence of the attention of the Muscovy Company being directed to the establishment of a new mercantile communication with the interior of Asia.

CREDULITY has been defined to be—Belief without reason. Scepticism is its opposite—Reason without belief.

HE who is governed by preconceived opinions, may be compared to a spectator who views the surrounding objects through coloured glasses, each assuming a tinge similar to that of the glass employed.—DR. PARIS.

* Cathaia, or Cathay, is the name formerly given to China, and the east of Asia in general.

ON THE MEANS OF DIMINISHING FRICTION.

A LARGE portion of the force necessary to every kind of motion is consumed by various obstructions which the moving body has to encounter. The resistance of the air is one of the causes of retardation; a degree of cohesive attraction between the touching substances is another; but the chief impediment arises from the rubbing of the surfaces which come incessantly into contact. This obstructing power inherent to all bodies constitutes friction, which produces so many diversfied effects and exerts so extensive an influence in diminishing the performance of all machinery. If we could procure a horizontal plane surface, perfectly free from the smallest inequalities, and then place upon it a flat surface also perfectly smooth, any amount of force applied to such body would set it in motion, and the motion would continue undiminished, except by atmospheric resistance. But when we find that a perfectly smooth surface does not exist in nature, and cannot be formed by art: that every surface, however smooth it may appear to the eye, is full of furrows, prominences, and roughnesses, we need not be surprised at the large amount of force necessary to be maintained for the production of motion of the simplest kind.

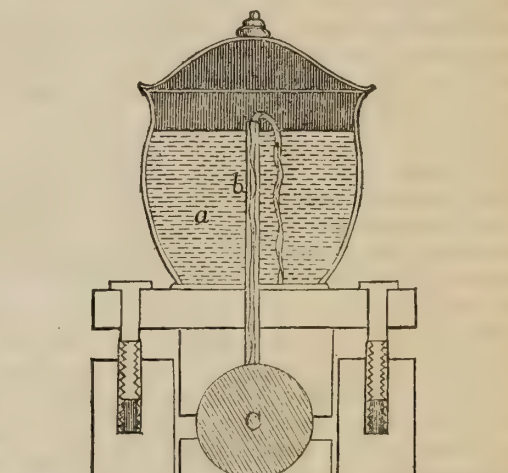
In the construction of machines, many ingenious and often complicated methods are devised for diminishing friction. When we find a principle everywhere and at every instant at work, tending to destroy the forces we are producing in the arts and ordinary concerns of life, we constantly complain of it as an evil, and do all we can to remove it; we would even destroy it if we could, and think that machine the most perfect which exhibits the least amount of friction. Yet, were it not for friction, the world would scarcely be habitable. Were there no friction—

It would be impossible for a man to move from any position in which he might be placed, without the aid of some fixed obstacle by means of which he might pull or push himself forward. And were there no horizontal power of resistance in the ground on which he treads, to destroy the forward motion which he gives himself at every step, he would retain that motion until some obstacle interposed to destroy it; so that the principal part of his time would be spent in oscillating about between the obstacles, natural or artificial, which the earth's surface presented to his motion; an oscillation which would be common to all the objects, animate or inanimate, about him. The slightest wind would sweep him before it; the slightest inclination of his body would bring him to the ground; everything he put out of his hand would start away from him, with the lateral force which he could not fail to communicate to it, in releasing his hold. If he attempted to sit down, his chair would slip from under him; and when he sought to lie down, his couch would glide away from him. He would in all probability be driven to forsake the land, and dwell upon the waters as the more stable element*.

There are two general methods of investigating the nature and operation of friction. The first method is, to ascertain the weight required to draw a body under the pressure of a given load along the horizontal surface of another. The second is still simpler, and consists merely in raising the end of the upper plane, till it acquires the declination at which the load begins to slide. The extreme declination of the plane is hence called the angle of repose.

The angle of repose often determines the outline of natural objects. Thus, fine sand slides more easily than mould, and hence sand-hills have generally a softer ascent than the grassy flanks of mountains. The latter, without being broken into precipices, may rise at an angle of forty degrees; but the former will seldom support an acclivity above twenty-five degrees. The angle of repose of iron pressing upon iron being sixteen degrees, if the threads or spirals of a vice wind closer than this inclination, the screw must hold at any place to which it is carried.

The means employed to diminish friction are of two kinds; viz., either by the interposition of unctuous or oily substances between the moving surfaces, or by certain mechanical arrangements. In delicate work, such as clocks and watches, where metal works against metal, the best substance perhaps is olive oil. But in some machines where the strain is very great, solid unguents appear to be preferable to oil, and in such case tallow or hog's lard is usually employed. The "Anti-Attrition Composition," which has been so much advertised for sale, is simply a mixture of four parts of hog's lard and one part of plumbago. In launching a ship the "ways" or sliders are smeared with soft soap. The slope of these sliders is in general not more than from 4 to $5\frac{1}{2}$ degrees. The lowest friction is here exerted, all previous adhesion being destroyed by blows of the mallet, and shocks given in the act of withdrawing the wedges. The momentary friction being 4, leaves an accelerating force of 3, which hurries the vessel forwards, notwithstanding its immense pressure of perhaps 35 tons on every square foot of the slide. If any impediment in the track should stop the progress of the ship, it soon regains such adhesive power as to render its removal very difficult. A tremulous agitation is the only expedient to urge the ponderous mass forward*.



When oil is applied to lubricate large works, it is apt to drain off, unless means are taken to confine it. The best contrivance for preventing the waste of oil and for keeping gudgeons and axes properly supplied with it, is Barton's Patent Lubricator, the ingenious construction of which will be understood from the accompanying section and description. *a* is a section of a metallic vessel filled with oil and closed by a cover fitting tightly to keep out dust; *b* is a small tube rising nearly to the top of the vessel, with the lower part extending an inch or two below it, and inserted into an aperture made through the block directly over the shaft *c:* through this tube a few threads of woollen yarn are drawn, which reach to the bottom of the vessel, and conduct the oil by capillary attraction, as a syphon, in minute but regular quantities to the shaft or gudgeon *c:* the whole of the oil in the vessel is thus carried over, entirely free from dust or other impurities, and in the precise quantity required, which is easily regulated by the number of threads. The economy of this contrivance is equal to its ingenuity: the machinery to which it is applied will

* MOSELEY'S *Mechanics applied to the Arts*, 2nd Edition.

* Hence the reason of the sudden falling down of weak or decayed structures. They are upheld long beyond the term of equilibrium, by the rooted adhesion of their parts; but any accidental shock dissolves this union, and the whole pile is precipitated to the ground.—LESLIE.

run with less friction, last longer, and require less power. The Patent Lubricator has been applied to the wheels of gentlemen's carriages with considerable success: a half a pint of oil will keep the axle well lubricated for a considerable time, and the wheels never require to be taken off for the purpose of greasing.

The mechanical contrivances for the diminution of friction consist either in avoiding the contact of such bodies as produce much friction, or by substituting as much as possible the motion of rolling for that of sliding. Thus, if a heavy load be drawn upon a sledge, the motion is that of sliding which is accompanied by the greatest amount of friction; but if the load be placed upon rollers, the nature of the motion is changed and becomes that in which there is the least amount of friction. Large masses of stone or timber would reqnire an enormous force to move them on a level road, but the motion is easily effected when rollers are put under them.

The wheels of carriages may be regarded as rollers which are being continually carried forward with the load. In addition to the friction on the road, wheels have the friction of the axle in the nave; but they do not have to encounter the friction of rollers with the under surface of the load, nor that of the carriage which bears the load. The advantages of wheel carriages in diminishing friction do not arise, as is sometimes supposed, from the slowness with which the axle moves within the box compared with the rate at which the wheel moves over the road: the amount of friction does not in any case vary considerably with the velocity of the motion. In wheel carriages the roughness of the road is more easily overcome by large wheels than by small ones. The former are not so liable to sink into holes as the latter, and in surmounting an obstacle, the load has to be elevated less abruptly. The smaller the rubbing axis of a wheel, the less the friction. Castors on household furniture act as wheels.

Friction is also diminished when the rubbing surfaces are made of different materials. Axles made of steel may with advantage be made to bear on brass; in small machines, such as time-keepers, the steel axle sometimes plays in agate or diamond cups.

Friction wheels or rollers are sometimes employed to remove the effects of friction. The axle of a wheel, instead of revolving within a hollow cylinder which is fixed, rests upon the edges of wheels which revolve with it. This is a species of motion in which the friction is of least amount. In Atwood's machine described in Vol. XIII., p. 181, of this work, friction wheels are admirably employed.

SWEET is the voice of well-earned praise
To every virtuous ear;
The inspiring meed of youthful days,
And e'en to manhood dear.

As opening flowers to sunny skies
Their blooming fragrance bring;
Warm'd by the approval of the wise,
Th' unfolding virtues spring.

Yet oft, with undiscerning mind,
The applause of man is given:
But, O my soul! what joy to find
Thy deeds approved in Heaven.

THE thief who picks our pocket does not so much harm in society, nor occasion so much pain, as they may be charged with, who shock the ear of piety with profaneness, or tear open the wounds of the bleeding heart by forcing upon it some painful recollection.—BEATTIE.

No species of reputation is so cheaply acquired as that derived from death-bed fortitude. When it is fruitless to contend and impossible to fly, little applause is due to that resignation which patiently awaits its doom.—ROSCOE's *Lorenzo de Medici*.

PALIMPSESTS.

THE term "*Palimpsest*" has been applied to manuscripts, from which the original writing has been erased, or washed out, and which have been then written on again. The word is aptly chosen, as it implies, according to its derivation from the Greek, the fact of the material for writing on having been *cleansed again*.

The material which, from its tenacity and consistency, was best capable of being submitted to this process, was *parchment:* the reader will find a very interesting article, descriptive of the preparation of this substance, at Vol. XIII., p. 133, of this work.

It seems that the practice of re-cleansing parchment, or removing the first writing, was not confined to the middle or dark ages,—to the inhabitants of the cloisters, but was in vogue even before the Christian era: it was probably resorted to from the time of the first production of parchment itself; for we are told that this material was always a scarce commodity until rather recent times. A preparation for effacing the original writing on parchment was known in the time of Augustus Cæsar; and Cicero, when writing to one of his friends, commends him for having been so economical as to write on a palimpsest, but says that he should like to know what those writings could possibly have been which were considered of less importance than a letter.

The ancients were in the habit of using likewise leaves or strips of the papyrus plant for the purposes of writing. This plant is common in Abyssinia, Egypt, and Syria, and is also met with in Calabria and Sicily; it inhabits both stagnant waters and running streams. The English word "paper," is derived from the name of this plant. The ancients had also a method of cleansing the papyrus-leaves of the original writing, though this substance was naturally very delicate and friable.

That parchment was a very costly material in the middle ages may be known from the fact that when Guy, count of Nevers, sent a valuable present of plate to the Chartreux of Paris, the unostentatious monks returned it with a request that he would send them parchment instead.

The scarcity and expense of parchment, therefore, and the demand for the writings of the Fathers and books of devotion in those times, frequently induced the monks to erase or wash out the writings of the classical authors, to make room for those of the Fathers. The original writing upon the parchment could be scratched out, and a peculiar kind of knife belonged to the apparatus of a transcriber: the parchment scratched in this manner was rubbed over with pumice-stone, to render it more fit for writing. The practice of thus removing old writings for the sake of the parchment was so common in the fourteenth and fifteenth centuries, that when the emperor of Germany empowered the creation of an imperial notary, one of the chief articles of the diploma of this officer was, that he should not use scraped vellum in drawing deeds. The manufacture of parchment has certainly been carried on in all ages; but that of the ancients was distinguished for its beauty, strength, and whiteness; for which reason, in later ages, a palimpsest of the ancient parchment was preferred to all the preparations of the new.

But, in many cases, the monks were not able to obliterate entirely the ancient writings; and a careful examination of these palimpsest manuscripts has led to the discovery of some valuable works and fragments of the classical authors. Among the most important is the treatise of Cicero "on the Republic," which was found in the Vatican Library at Rome by Angelo Mai, in a manuscript which had been re-written with the Commentary of St. Augustin on the Psalms. The *Institutions* of Gaius, which contained the Roman code of laws at the commencement of the Christian era, were also recovered

in a similar manner in the library of the chapter of Verona.

This latter manuscript consists of 127 sheets of parchment, the original writing on which was the four books of the *Institutions*, by Gaius, a Roman, who lived about the year A.D. 150. This original writing had, on some pages, been washed out, so far as was practicable, and on others scratched out; and the whole, with the exception of two sheets, had been re-written with the Epistles of St. Jerome. The lines of the original and of the substituted writing run in the same direction, and often cover one another;—a circumstance which considerably increased the difficulty of deciphering the text of Gaius. In addition to this, sixty-three pages had been written on *three* times: the first writing was the text of Gaius, which had been erased; and the second, which was a theological work, had shared the same fate, to make room for the Epistles of St. Jerome. This work of Gaius was found and restored in the year 1816.

The re-production of the traces of the original writing on the parchments has not, however, always been found so difficult a matter as in the case of the *Institutions* of Gaius. As the transcribers in the middle ages, when the want of writing-materials was felt, in consequence of the great demand for missals, &c., often divided the large sheets of written parchment, the second set of lines is sometimes found diagonal to the first; so that the old and new cross each other, or the old lines have remained above the others.

We thus see that some valuable writings of the ancients have already been recovered from beneath monkish effusions or superstitious legends, by carefully following the traces of the pen or style, which had impressed the former performance upon the membrane; and which traces still continued to exist in spite of the impressions made by the second scribe. The original characters thus often remain legible, so as to be visible to the naked eye; or they may be made to appear with the assistance of chemical agents. Persons whose business it was in the middle ages to prepare parchments by erasing manuscripts, were called "parchment-restorers."

This subject has greatly attracted the attention of *philologists*, or lovers of literature, for some years past. The increasing zeal in the search for remains of classic learning has directed the attention of the most erudite scholars to these hidden treasures; and we may hope that the great collections of manuscripts at Rome, Naples, Oxford, Cambridge, &c., which have been as yet but little examined, will afford us many more remnants of the literature of olden time.

THE MECHANICAL PROCESSES OF SCULPTURE.

It is difficult to name a branch of art, the successful application of which requires a more varied combination of powers than that of sculpture. The artist places before him a lifeless, shapeless block of marble, and from this he elaborates a figure which represents all the personal beauties of the human form, and in some instances almost seems to represent *mind*, as manifested by the expression of the features. Not only must the sculptor be familiarly acquainted with the anatomy of the human form, and those nice gradations of expression which indicate the varied workings of the mind within, but he must also possess consummate mechanical tact, in cutting the block neither more nor less than is necessary for the production of the desired effect. There is one very marked distinction between the labours of the painter and those of the sculptor: if the former employ a wrong colour, or use it injudiciously, he can repair his error, either by removing the paint, or by working upon it; but if the sculptor were to chisel away too much of his marble at any one point, no subsequent repair would adequately restore the deficiency. Having in another place treated of sculpture as a fine art, we now propose to give a brief description of the mechanical process of sculpture.

It must not be supposed that the sculptor produces a statue or bust without any copy to guide him. He *models* a figure in the first instance of some plastic and yielding substance, and when this model is completed he imitates it by cutting the block of marble to a similar form. The model is built up or formed piece-meal, not hewn or cut out of a solid lump, and the modeller is thus enabled to attain the desired form with more ease, because he can add or remove small portions of the substance at pleasure. It appears pretty certain that the ancients almost always formed their first models in wax, although in modern times clay is generally used for this purpose. This preference of the ancients for the use of wax did not result from their non-acquaintance with the use of clay, but from certain advantages which wax possesses over clay. Indeed, as has been observed by a recent writer, if clay could be made to retain its original moisture, it would undoubtedly be the fittest substance for the models of the sculptor, but when it is placed either in the fire, or left to dry imperceptibly in the air, its solid parts grow more compact, and the figure, losing thus a part of its dimensions, is necessarily reduced to a smaller volume. This diminution would be of no consequence if it affected the whole figure equally, so as to preserve the proportions unaltered, but in effect the smaller parts of the figure dry sooner than the larger, and thus losing more of their dimensions than the latter in a given space of time, the symmetry and proportion of the figure somewhat suffer. On the other hand, wax cannot be worked up so smoothly to represent the fleshy parts as clay, and hence the plan usually followed is a combination of both, by making a model of clay, then making a mould of plaster from this model, and lastly casting a second model, from this mould, in wax.

When the artist has prepared a drawing conveying a general idea of the figure to be modelled, he proceeds to build up his statue or group, for which purpose a general nucleus or skeleton is first formed of wood or iron: to this small crosses are generally attached, in order to form fixed points of support for the clay. The clay, carefully prepared for that purpose, is then laid on the skeleton, either by the hand, or by some convenient implement, and by means of small wood or ivory tools, with their ends pointed, round, square, or diagonal, he gives the clay the required form. Whether the figures are or are not to be covered with drapery, he models them naked, in order to insure correctness of anatomical detail, and afterwards, if requisite, forms the drapery by extra layers of clay.

When the model is completed, it is not often that the sculptor proceeds to chisel his marble from the clay model as a pattern, but he forms a plaster mould, from which to obtain a plaster or wax figure. Supposing, for simplicity of description, that the work is a bust, he encases the clay model of the bust with a thin stratum of cream-like plaster; but as this case has afterwards to be removed from the model, he adopts the following plan. A thin edge or ledge of clay is laid along the bust from the head to the base, on both sides, so as to form a separation between the front and back portions of the bust, and the front is first completed up to this ridge of clay, the moulder carefully casting the thin plaster into the recesses of the eyes, ears, nostrils, &c. A thicker plaster is then thrown on, till a thickness of two or more inches is obtained. The ridge of clay is now removed, the edges of the plaster are slightly touched with oil, and the back is covered in the same way, till the whole becomes a shapeless lump of plaster. This lump is, when dry, separated by a few blows with the mallet and chisel, so as to come off the model in two pieces, which together form a mould or counterpart of

the model. These two pieces, after being cleaned, are slightly moistened with oil, and united again with cords wrapped round them. A plaster cast from this mould is then obtained, by pouring liquid plaster into it, and by breaking or separating the two halves of the mould when the plaster has set: if the cast be of wax instead of plaster, the mode of casting is nearly the same.

When the clay, plaster, or wax model is completed, the sculptor proceeds to imitate it in marble. There are various contrivances for guiding him in this operation,—of which one is as follows. A number of small black points are marked upon the model in every principal projection and depression, to give the distances, heights, and breadths sufficient to copy the model with exactness. The ancients effected this by considering every three points on the figure as forming a triangle, which they made in the marble to correspond with the same three points in the model, by trying it with a perpendicular line, or some other definite line, both in the marble and in the model.

Another contrivance, suggested by the Academy of Painting at Rome, is the following. The statue or model which is to be copied is inclosed in a frame that fits it exactly; the upper part of which is divided into a certain number of equal parts; and to each of these parts a thread is fixed, with a piece of lead at the end of it. These threads, hanging freely downwards, shew what parts of the stone are most removed from the centre, with much more perspicuity and precision than the dots before spoken of; and they also afford the sculptor a tolerable rule by which he may measure the more striking variations of height and depth. But a serious difficulty nevertheless attends the use of this method; for as it is impossible by means of a straight line to determine with precision the direction and nature of a curve, the sculptor has no certain rule to guide him in his contours; and whenever the line which he is to describe deviates from the direction of a plumb-line or vertical, he must necessarily feel at a loss, and proceed somewhat on conjecture. Another inconvenience attending this method is, that there is no certain rule to determine exactly the proportion which the various parts of the figure ought to bear to each other. Even if horizontal lines be drawn intersecting the plumb-lines, the difficulty is not wholly removed; for the squares formed by transverse lines that are at a distance from the figure, although they be exactly equal, yet represent the parts of the figure greater or smaller, according as they are more or less removed from our position or point of view. Still however, notwithstanding these defects, this method is deemed by some persons the best that has been devised.

A third method, and the one most generally adopted in modern practice, is the following. When the block of marble is ascertained to be of sufficient size, it is fixed on a basement of stone, or a strong wooden bench called a *banker*, in front of which is a long strip of marble, divided into feet and inches. Another strip of marble divided in the same manner, is placed below in front of the model; and a wooden perpendicular rule, the height of the work, is placed so as to be moveable from the strip of marble or scale under the model to that which is under the block to be cut. This wooden rule is first placed on the scale of the model; and the exact distance from it to any prominent part, such as the nose or chin, for example, having been taken, the rule is removed to a corresponding position on the other scale, and the workman cuts away the marble to the same distance from the perpendicular at the same height, that is, till he has arrived at that point of the block which is to form the prominent part in question. The sculptor then proceeds in the same way with other prominent parts; and afterwards to the depressions which intervene between them; until he has at length obtained a rough figure, containing within it all the other minute details which remain to be brought out by the skilful hand of the master.

A variation of the above method is practised by some sculptors. The model and block of marble being ranged side by side on the bench or platform, a brass frame is placed in front, on which slides a brass perpendicular joint. This joint carries a tube through which a rod passes, and which is brought in front of the model, to some particular part of which the point of the rod is applied; the point being set, it is retained at that distance in the tube by a screw. The instrument is now placed in a corresponding position in front of the block, on which the position of the point is marked by the end of the rod. A hole is now drilled in the block in this place, to such a depth as to allow the sliding rod to penetrate it to the proper distance. Another point is now taken, and the block drilled in a similar manner; till at length it is pierced in every direction. These parts are then cut away with the chisel, care being taken never to remove any part below where the drill has been. Mr. Behnes, the sculptor, has invented a very ingenious machine for producing the required effect somewhat in this manner.

When the assistant workmen have, in some one of the ways described above, brought the block of marble to a rough stage of approximation to the desired form, the master-hand proceeds with his delicate and difficult work. He chisels the figure with a flat-ended steel tool about half an inch broad. In the plain parts he cuts a channel in the surface from one given point to another; then cuts other channels parallel with it, leaving intervening ridges about an eighth of an inch broad; then cuts other channels in a direction at right angles with the former; and lastly cuts away the remaining rough surface. It is found that by no other means can he produce a level and regular surface; but this being once produced, he can easily vary it with the requisite undulations. Generally speaking, the chisel and hammer are the tools employed; but when the hollows are so deep and intricate as not to be easily reached by this means, drills of different kinds are employed, followed by other tools furnished with long handles, and worked by the hand only, without the use of a hammer. It need scarcely be observed, that to produce a successful imitation of the fulness of muscle, the pliability of the softer parts, the strength of tendons, and the firmness of bone, requires that the sculptor should be well acquainted with the anatomical characteristics of the several parts. The light, soft, and curly appearance of the hair requires considerable manual dexterity to imitate.

When the chiselling is completed, the surface of the marble requires another process to bring it to a smooth state. This is effected by the use of rasps and files, made for this purpose in Italy; coarser rasps being used first, and then very fine files. If any part of the piece of sculpture is required to have an unusually smooth surface, it is rubbed over with pumice stone after the file has been used; and sometimes the whole surface is rubbed or ground carefully over with small pieces of grit-stone, accommodated to the various forms of the surface, as to flat spaces, rounds, hollows, &c. The hair does not admit of being finished in this way, as the delicacy and lightness of its appearance requires that the finishing touches should be given by a very fine and keen-edged tool.

If the bust or figure on which the sculptor is at work be not very large, he places it on a large, square, four-footed stool, provided with a movable top which turns round on brass or iron balls.

LONDON:
JOHN WILLIAM PARKER, WEST STRAND.
PUBLISHED IN WEEKLY NUMBERS, PRICE ONE PENNY, AND IN MONTHLY PARTS, PRICE SIXPENCE.
Sold by all Booksellers and Newsvenders in the Kingdom.

THE

Saturday Magazine.

Nº. 608. DECEMBER 25TH, 1841. Price One Penny.

FLOATING ISLANDS.

THE LAKE OF THE FLOATING ISLANDS.

It was a fancy of the ancient Greeks, that Delos, one of the Cyclades, in the Archipelago, was originally an island floating on the waves, and exposed to all the casualties of storm and tempest, but that Neptune, out of pity for its forlorn condition, made it stationary, and in order to fix it securely, begirt it with the two islands, Mycone and Gyaros. Absurd as this idea may appear to us, there are many instances of floating islands really existing at the present day, and it is only the size and *situation* of Delos, with the superstition respecting Neptune, that make the story of the Greeks incredible.

In various parts of the world these islands are formed, either naturally or artificially, on lakes and rivers; but perhaps the most celebrated among them are the *Chinampas*, or floating gardens of Mexico. It is said that they owe their origin to the extraordinary situation in which the Aztecs were placed on the conquest of their country by a neighbouring nation. They were driven to take refuge in small islands on the lake, and were obliged to exercise the utmost ingenuity in order to provide a sufficiency of food for their sustenance. Humboldt thinks that the idea of these gardens was suggested by Nature herself, since on the marshy banks of the lakes of Xochimilco and Chalco, the agitated waters, in the time of the great floods, carry away pieces of earth, covered with herbs, and bound together with roots. Whatever may have first prompted the idea, we find that the early Chinampas were generally composed of fragments of earth, artificially joined together and cultivated, and that their use was for some time confined to the growth of maize and other necessaries of life. When the Mexicans had delivered themselves from their unhappy condition, the floating gardens of their lakes were no longer appropriated to the exclusive cultivation of necessaries, but became the means of adding to the luxuries of the people, and teemed with delicious fruits and fragant flowers. These gardens are now extremely common in Mexico, and are of two kinds those which are always floating about on the water, and are wafted hither and thither by the capricious winds; and those which are attached to the shore by chains, for the convenience of the proprietor, who perhaps has his dwelling on the adjacent bank. But even in this latter case, if the owner of the Chinampa becomes dissatisfied with his situation, or has some disagreeable neighbour whom he wishes to avoid, he has nothing to do but to unloose the chains which bind his island to the spot, and with his hut and his plantation, float wherever he pleases.

The principal supply of flowers and roots required in the city of Mexico is obtained from these gardens, nor is the cultivation of the useful vegetables neglected. Some of these fertile spots are devoted to the rearing of beans, artichokes, and cauliflowers, round which a hedge of rose-bushes gives solidity to the soil, and in the time of their blossoming, a lovely and fragrant ornament to the whole. In the driest seasons these Chinampas are always productive, and when it is necessary to renew the powers of the soil it is easily done by means of mud taken from the bottom of the lake, which is of a highly fertilizing quality. The gardens are sometimes of considerable extent, but more frequently they are small, and contain no other dwelling than a little hut to shelter the cultivator from heat or storms, or a cottage

for the habitation of an Indian, who has the charge of a contiguous group of gardens. It is said to be a very pleasing sight to watch the arrival of the innumerable rafts, descending at sunrise towards the city by the canals of Chalco and Istacalco, and bearing the rich productions of these floating islands. It is likewise a favourite recreation of the citizens of Mexico to proceed towards evening in small boats, and row in among these luxuriant gardens, where the vegetation is always fresh and brilliant, and where they find an agreeable solace after the fatigues of the day.

Floating gardens of a more fragile kind than those of Mexico are very numerous in the lakes of Cashmere. It may be known to many of our readers that the celebrated land of Cashmere consists of one vast valley, encircled by lofty mountains, and bearing strong evidence of having been, at some distant period, one immense lake. Horizontal lines, running along the face of the mountains on both sides, mark the gradual subsidence of the waters, while the wondrous fertility of the soil warrants the conclusion that at one time an immense quantity of material was furnished by the surrounding elevations. A considerable portion of the city of Cashmere is situated in a part of this valley, where the ground is still marshy, and where, in considerable inundations, it is liable to be flooded. There are also numerous lakes which, with the river Vidusta, separate the city into different insulated portions. Hence many inconveniences arise to the inhabitants, and the cultivation of their gardens is checked by the expectation of a flood, which will render their labour useless, by sweeping away the products of the soil. These circumstances have led to the practice of forming floating gardens, or rather, of taking advantage of those partially formed by nature. In an account of the natural productions of Cashmere Mr. Moorcroft gives an interesting description of these gardens. Various aquatic plants spring from the bottom of the lakes, such as water-lilies, confervæ, sedges, reeds, &c., and the boats which traverse these waters, taking in general the shortest way to their places of destination, cut, as it were, a track through the weeds in various directions. In these patches of sedge and rushes the farmer establishes his melon and cucumber floats, by cutting off the roots of the aquatic plants about two feet under water, so that they lose all connexion with the bottom of the lake, but still continue attached to each other. He then presses them together in closer contact and forms them into beds of about two yards in breadth, and of an indefinite length. The heads of the sedge, reeds, and other plants are then cut off, and left on the surface of the float, which is next overlaid with a thin coat of mud, which gradually insinuates itself into the mass of matted stems. The float is prevented from being wafted about by the wind by stakes of willow, which are driven through it at each end, and which do not prevent its rising and falling with the rise and fall of the water. When the gardens are thus prepared for the reception of the vegetable to be raised on it, the gardener has in readiness a number of cucumber and melon plants, which he had previously raised under mats. Such of these as have four leaves, he places upon the floating mass at about two feet distance from each other. After the planting, no further labour is necessary, and the only remaining care is to collect the fruit. Some of these islands will bear a man's weight, but the fruit is generally gathered by a person sitting in a boat; and owing to the small breadth of the garden, all the operations connected with it may be conducted in the same way.

Thus it will be seen that the floating gardens of Cashmere are of an inferior description to those which have excited so much interest in Mexico, and are not capable of producing an equal variety of plants; yet they are sufficient for the wants of the people, and yield in abundance the fruits for which they are prepared. Mr. Moorcroft thus speaks of their luxuriance:—

I traversed a tract of about fifty acres of these floating gardens in cucumbers and melons, and saw not above half a dozen unhealthy plants, nor have I seen in the cucumber and melon grounds, in the vicinity of very populous cities in Europe, or in Asia, so large an expanse of plants in a state equally healthy, though it must be observed, running into somewhat too great luxuriance of growth.

In China, also, where an excessive population renders it imperative on the inhabitants to have recourse to every expedient for increasing their means of subsistence, rafts and floating islands are formed on the surface of their numerous lakes and rivers, the whole of which are teeming with life and vegetation. In the neighbourhood of the city of Canton alone it is calculated that more than forty thousand persons live on the river, in islands, on rafts, or in boats. These persons are considered as a distinct part of the population, being under a separate regulation, and not allowed to intermarry with those on shore. Even the large rafts of timber which are floated down to Canton from the north and west, become the temporary abodes of numbers. Huts are erected on them and families of young children may be seen sporting fearlessly on these plains of floating timber.

Several floating islands have been observed in Lapland. In a small lake near the Gothic fortress of Castello Archione, several have been naturally formed by plants matted and joined together, which have attained sufficient consistence to allow of the peasants getting upon them, and navigating the lake with them, by means of long poles.

A small lake at Artois, near St. Omer, is covered with floating islands, and we are told that the neighbouring farmers draw them near the shore, and drive their cattle on them, to feed upon their rich pasturage, afterwards unloosing the islands again, and allowing them to drift at the mercy of the winds. Some of these islands exist in the Lake Gerdan, in Prussia, and are of considerable importance, if the account be correct which informs us that a hundred head of cattle find pasturage on them. An island of this description which exists in the Lake of Kolk, in Osnabruck, is said to be covered with fine elms.

Small floating islands exist in the beautiful Loch Lomond, and in other waters of Scotland and Ireland, nor are the lakes of Cumberland without a specimen of this curiosity. A very remarkable one has emerged from the bottom of the Derwent, three times within the last thirty years. It was formed by the gradual deposition of decayed aquatic plants. In a small sheet of water connected with Esthwaite Lake, Hawkeshead, a floating island, thirty yards long, by five broad, has existed for many years. Some years back a heavy flood lifted it half on land, where it remained stationary, until some young men, taking advantage of a high state of the water, re-launched it, and sailed across the lake upon it. It has frequently been guided from the smaller to the larger lake, and *vice versâ*, and on one of its trips it bore fifteen persons across the waters. The shrubs of various sorts growing upon it supply the place of sails.

These islands, generally speaking, may be regarded rather as a matter of curiosity, than of economic importance. They occur in almost every part of the world where a marshy soil is prevalent. In the Nile, in the Congo, in the Lake of Tivoli, in the marshy lakes of Commachio, near the Gulf of Venice, in Guayaquil, in the kingdom of Quito, and many other places, we read of the frequency of floating islands, but we do not find them appropriated to useful purposes except in a few instances. It has been suggested that the water-surface of our own islands might be called upon to contribute to the support of our increasing population, but it is very much to be questioned whether the plan would be attended with beneficial results in such a climate as ours.

Our engraving presents a view of one of these lakes in the Campagna Romana, about fourteen miles from the city

of Rome, of volcanic origin. Its ancient name was *Aquæ Albulæ*, since called *Lago Tartari*, *Lago Solfatare*, or, *Lake of the Floating Islands*. The water is of a bright blue colour, highly charged with sulphur; it is much warmer than the atmosphere, extremely disagreeable to the taste, and possesses the property of petrifying all substances with which it comes in contact. Thus, the decomposed rushes and rank weeds with which the lake is bordered, falling therein, become hardened in very large masses, and float on the surface: hence the name, *Lake of the Floating Islands*. Its waters are reported to be fathomless, and no fish can live within its depths. On the side of the lake are the remains of the baths, erected by M. Agrippa, frequented by Augustus, and subsequently repaired by Zenobia, Queen of Palmyra. In consequence thereof, these ruins are now called *Bagni della Regina*, or Baths of the Queen.

It is an imperative duty to maintain at all times an important truth; for even should we despair of seeing it immediately recognised, we may so exercise the minds of others, as to lead them in time to a greater impartiality of judgment, and in the end to a perception of the true light.—Silvio Pellico.

Married life appears to me a sort of philosophical discipline, training persons to honourable duties, worthy of the good and wise. Few unmarried people are affected as they ought to be towards the public good, and perceive what are really the most important objects in life.—Melancthon.

To me there is something affecting in the *last look*, on whatever object it is cast, for the last of everything reminds us of the last of life, the last day we shall spend on earth—the last look we shall fix upon terrestrial scenes—when we must turn from the beloved objects, whose society and sympathy have sweetened our cup of woe, and filled our span of time, to the loneliness of death and the realities of eternity.—Sir Thomas Raffles.

True wisdom bids her disciples search into the mysteries of nature as far as nature's ways are penetrable by man; but, although they scorn to hoodwink reason, they perceive and acknowledge that there is no surer sign of rationality than the forbearing to torture reason with inquiries beyond its scope and ken. True wisdom teaches that, besides the things which are revealed, there yet remain secrets, which belong not to us or to our children: still the knowledge attained and attainable by them is great; and they love not less because they know not more. And how different must be the feelings of one, who sees in all the mechanism and adaptations of the universe but the effects of chance, the results of a blind impulse of mutation, from those with which the self-same wondrous works are beheld by him who traces throughout the whole creation the finger of the great Creator: the former misinterprets the book of nature, and reads therein a melancholy tale, by which he is taught, not in humility, but in despondence, to "say unto corruption, thou art my father, and unto the worm, thou art my sister and my mother;" while to the latter, the heaven and the earth, and all that they contain, become narrators of the wisdom and benevolence of Him who made them. Yes; for, although there is neither speech nor language, (by reason's ear) voices are heard among them; and the true philosopher, instead of bewildering himself in unsound metaphysical speculations, perceives, even in those things which are the least understood, sufficient evidence of design to forbid their production to be attributed to chance: he recognises at once proofs of skill in the design, that he cannot fathom; and of power in its execution, that he can neither measure nor comprehend. Yet, although incomprehensible, and hence, to some a stumbling-block, and to others foolishness, he beholds in these obscurities many sure manifestations of a wisdom without limit, and of a power without control. Yes, these clouds, which bound the horizon of human knowledge, are clouds of witnesses, for o'er their darkness he sees extended a bow of promise, a standard of the Deity; and therefore, joining in the common theme of praise, with mingled sensations of gratitude and love, he humbly yet confidently declares, "My Father *made them all*."—Gilbert T. Burnett.

ON CHESS. XXIV.

Chess without the Board.

The severe mental exercise necessary for conducting a game of chess, without the help of board or men, was practised at a very early period in the history of the game. So far back as 970 years after Christ, an individual named Joseph Tchelebi is said to have acquired a facility at playing chess, blindfold; nor was this at all an unusual case in the East. The chess-board and men were, however, *handled* by these persons, and the difficulty of conducting the game was thereby greatly lessened.

Far more difficult was the task, and far higher rose the fame of the celebrated personage who appeared in 1266, and astonished the people of Italy by his performances. The name of this man was Buzecca, a Saracen, who visited Florence at the period above mentioned, and gave play at the same time to three of the best artists in chess which Italy could produce. These games were played in the presence of numerous persons of distinction: two of the games were conducted by Buzecca without seeing the board, while the third was going on between himself and an antagonist in the ordinary manner. Great was the astonishment and admiration of those who witnessed this trial of skill to find the Saracen winning two games and drawing the third. The opponents of Buzecca being on this occasion chosen men, and of a country which had become renowned for skilful chess-players, there is the more reason to admire the talent by which he was able to defeat them, and to remark on the high state of cultivation which the science of chess must have arrived at in the East.

Several persons are mentioned as excellent blindfold players, at the close of the sixteenth and commencement of the seventeenth century, especially the celebrated Ruy Lopez, chess-professor at the Spanish court, who wrote an elaborate treatise on chess, but with unusual modesty omitted to mention his own attainments as a blindfold player. Mangiolini of Florence, Zerone, Medrano, Leonardo da Cutri surnamed Il Puttino, and Paolo Boi, are some of the distinguished names of this period in that branch of chess-playing now under consideration. The last-mentioned individual was in the habit of playing three games at once without seeing any one of the boards, and without intermitting his usual strain of lively conversation. He was contemporary with Ruy Lopez, who was decidedly his inferior, and with Leonardo of Cutri, who was by many persons deemed his equal. The life of Paolo is sketched by two historians, Carrera and Salvio, and contains many interesting particulars, which we have given in our notice of celebrated chess-players. Paolo was the conqueror of every chess-player of his day, except Leonardo da Cutri. The contest between Leonardo and Paolo was very severe. They played a match which lasted three whole days. During the first two days they were exactly equal, but on the third Paolo, who was suffering in health at the time, lost ground, and was finally defeated. The two heroes never encountered each other again. Respecting the style of play of these two men we read that Paolo was rapid in his moves, while Leonardo was extremely slow and cautious.

Girolano Saccheri, a priest of the order of Jesuits, is spoken of by Keysler, the historian of Turin, as a man of extraordinary chess attainments. He lived at the early part of the last century, and was of so precocious an intellect, that, before he was ten years old, he could solve the most difficult problems in algebra and arithmetic, and was afterwards constituted public lecturer on mathematics at Pavia. He could play three games, or according to some writers even four, at the same time, with perfect clearness and accuracy, without seeing any one of the boards.

The practice of playing chess blindfold, had, for so

many years fallen into disuse that when the astonishing performances of Philidor were made known, they were regarded as a feat of intellect altogether new and peculiar to that great player. In our biographical sketch of Philidor we have spoken of his achievements in this difficult department of the game, and pass on now to say a few words respecting the most celebrated blindfold players of our own day.

The faculty of playing chess without seeing the board is not the invariable, or even general accompaniment of excellence in that science. Many first-rate players have been unable to attain it, while some who have accepted odds of these, have found little difficulty in carrying out a game to its termination blindfold. Those who study chess chiefly from books, find less difficulty in playing without the board, than those who have acquired their knowledge chiefly from practice. There have been very eminent men who never looked in a chess-book until their own high standing was already taken—of such were La Bourdonnais, Deschapelles, St. Amant, Boncourt,—again there were others who were essentially book-players, and likewise excelled. Mr. Mac Donnel, one of the best players Great Britain has ever produced, studied much from books. In the blindfold games played by him, moves were made more quickly than when he saw the pieces.

He expressed some feeling of annoyance, (says Mr. Walker,) if the bystanders spoke in whispers, but had no objection to conversation being carried on around him in a natural tone of voice.

But since the time of Philidor no one has excelled so highly in the art of blindfold playing as the late M. de la Bourdonnais. With very little practice he was able to play one game at a time, within a pawn of his strength, as he proved by playing publicly with MM. Boncourt, Jouy, Bonfil, and others, He afterwards played two games at once against third-rate players, and was preparing to play three blind-fold games at once against the best players, when an alarming rush of blood to the head was the result of this severe, and we may add useless, mental exertion. A long illness was the consequence, and M. de la Bourdonnais was compelled to relinquish all further attempts at playing without seeing the board.

The difficulties attendant on acquring skill in chess can scarcely be exaggerated even when playing in the usual manner with unlimited time at command to expend in surveying the forces on the field before us. In how vast a degree must these difficulties be multiplied when the mechanical objects of the chess-men and chess-board are abstracted, and no longer exist save in the powers of the mind; when the windows of the brain are closed down, and the faculties of sight are hermetically sealed; when a bare idea alone remains and all abroad is darkest night; when all that is left of the chess-board and men is their vague and timid shadow, wandering, spectre-like, across the mental chamber, like objects on a camera obscura; when memory and the perceptive faculties of the brain must be taxed, unaided, to name the position of every piece, pawn, and square of the chequer! And when these efforts of the reasoning and thinking powers require to be uninterruptedly prolonged and sustained, during a period of possibly several consecutive hours, without the slightest relief, break, pause, rest, or relaxation; then, I say, the art of playing chess without seeing the board, becomes, fairly considered, an extraordinary effort of the mind; and one which must be allowed to be, in the eyes of the metaphysician, equally curious as interesting.

These remarks by Mr. George Walker apply, of course, to first-rate players who conduct the game blindfold within a pawn of their strength, and in this way play two or even three games at the same time. But to play one game badly without seeing the board is comparatively easy, and may be done by many a second or third rate player who is willing to bestow a little time on the exercise.

Mr. Walker gives some very sensible directions for the guidance of those chess players who are desirous of playing without seeing the board. Referring such as are interested in the subject to his article in *Fraser's Magazine*, Vol. XXI., p. 302, we pass on to notice the "Art of Playing without seeing the Board," by Carrera, whose remarks are not so well known nor so accessible as Mr. Walker's.

Those who are desirous of learning the art of playing without seeing the board, must have in their mind all the squares of the chess-board, and all the pieces that are or were on them. It is not sufficient, as some think, to know that such a square belongs to such a piece, or has such a number, because much more than this must be learned. In the first place, the player may take as a certain rule, that on the perpendicular lines all the odd numbers are of the same colour; for example, if the first square of a line be white, then the third, fifth and seventh squares will also be white; if the first be black, the third, fifth, and seventh will be black. It is different with the oblique lines, which are either all white or all black; for example, the oblique line which begins at the white king's rook's square is entirely white, and that beginning at the white queen's rook's square, entirely black; and as all the straight lines have neither more nor less than eight squares, it is not necessary to say anything more respecting them; but it is very different with the oblique lines; only two of these contain eight squares, namely, those which begin at the rook's squares, one of which is white, and the other black; those lines which begin at the knight's squares having only seven squares, one line is black, the other white; moreover from the knight's white square on the left hand is another line containing only two squares, and from the king's black square on the right hand, is also a line containing only two squares, but it would be tedious to mention all the squares of the oblique lines; suffice it to say, that all the squares whether black or white, on the right hand or on the left, should be remembered by the student. This is the more required, because it is not only necessary to know the squares from the beginning, but also from the middle and end of the lines: for example, the third square of the white queen is white, which branches into an oblique line of four squares forwards on the king's side, and backwards on the same line two squares on the queen's side; forwards to the left is another line of three squares, and backwards on the king's side two squares; it is also necessary to know which of these squares is the king's fourth, adversary's bishop's fourth, king's third, rook's second, &c.

With regard to the pieces and pawns, it is necessary to have well fixed in the mind their position when on their own squares, in order to know what squares they attack: for example, it is not sufficient to know the situation of the king's pawn at its own square; you must also know that it attacks the queen's third, and king's bishop's third square; the same with the pieces; the white king's knight on its own square attacks the king's second, bishop's and rook's third square: it is much more difficult, when the pieces have quitted their own squares to know what squares they attack, so that the essence of playing without seeing the board consists in the knowledge of the relative position of the squares, and of one's own and one's adversary's pieces, so that the player may not mistake, when he checks the adversary, if he can give him check mate, or if he can interpose any piece or pawn &c., &c.; all which requires, too, a perfect knowledge of the pieces exchanged and taken, for without it one cannot possibly play without seeing the board.

Of the pieces, the knight is considered the most difficult to remember, on account of the peculiarity of its move, and therefore I shall make a few remarks on it; from the square on which the knight is, counting two squares forward, backwards or sideways, the knight attacks the square adjoining the third square to the right and left; the smallest number of squares that the knight can attack is when it is on one of the rooks' squares, as it attacks only two squares; if it be on its own square it attacks three squares; four squares, if it be placed on the bishop's, king's, queen's, knight's second, or rook's third or fourth square; if it be placed on the king's third or fourth, queen's third or fourth, or bishop's third or fourth, it attacks eight squares; if it be placed on the remaining squares it attacks only six squares.

The pawns are more easy to keep in mind, because they never attack more than two squares, and the rook's pawns only one; after the pawns, the piece the easiest to remember is the king, then the rook, then the bishop (because it is easier to remember the perpendicular than the oblique line), then the queen. Besides to play well without seeing the board, it is necessary to play often, which is not a little fatiguing; no one can play so well from memory as if he

saw the board: this is allowed by all who profess to play without seeing the board. I grant that some succeed better than others, but none so well as if they saw the pieces. It is not necessary to be very skilful in order to play without seeing the board, for common players succeed in it; allowing the difference in play between seeing and not seeing the pieces.—Lewis's *Translation of Carrera.*

In the education of the intellectual powers, two chief ends are to be kept in view: first, the most advantageous developement of these powers themselves; and, second, the communication of the greatest amount of knowledge capable of being brought into useful application.—*British and Foreign Medical Review.*

It must always be the condition of a great part of mankind to reject and embrace tenets upon the authority of those whom they think wiser than themselves.—Dr. Samuel Johnson.

A man's own heart must ever be given to gain that of another.—Goldsmith.

To adopt popular opinions without the slightest hesitation, is to run the risk of introducing into science, to its great injury, a multitude of confused notions founded on phenomena imperfectly seen and inaccurately examined; but to reject such opinions without examination, is often to lose an opportunity of important discovery.—*Magazine of Popular Science.*

UNION BETWEEN SOUL AND BODY.

When we die, we do not cease to be, nor cease to live, but only cease to live in these earthly bodies; the vital union between the soul and body is dissolved, we are no longer encloistered in a tabernacle of flesh, we no longer feel the impressions of it, neither the pains nor pleasures of the body can affect us: it can charm, it can tempt no longer. This needs no proof, but very well deserves our most serious meditations.

For this teaches us the difference and distinction between soul and body, which men who are sunk into flesh and sense are apt to forget; nay, to lose the very notion and belief of it. All their delights are fleshly; they know no other pleasures but what their five senses furnish them with: they cannot raise their thoughts above this body, nor entertain any noble designs, and therefore they imagine that they are nothing but flesh and blood, a little organized and animated clay; and it is no great wonder that men who feel the workings and motions of no higher principle of life within them, but flesh and sense, should imagine that they are nothing but flesh themselves. Though methinks, when we see the senseless and putrefying remains of a brave man before us, it is hard to conceive that this is all of him; that this is the thing which some few hours ago could reason and discourse; was fit to govern a kingdom, or to instruct mankind; could despise flesh and sense, and govern all his bodily appetites and inclinations, and was adorned with all divine graces and virtues; was the glory and pride of the age. And is this dead carcase, which we now see, the whole of him? Or was there a more divine inhabitant, which animated this earthly machine, which gave life and beauty to it, but which is now removed?

When we consider that we consist of soul and body, which are the two distinct parts of man, this will teach us to take care of both. For can any man who believes he has a soul be concerned only for his body? A compound creature cannot be happy, unless both parts of him enjoy their proper pleasures. He who enjoys only the pleasures of the body is never the happier for having a human and reasonable soul: the soul of a beast would have done as well, and it may be better; for brute creatures relish bodily pleasures as much, and it may be more, than men do; and reason is very troublesome to those men who resolve to live like brutes, for it makes them ashamed and afraid, which in many cases hinders, or at least allays their pleasures. And why should not a man desire the full and entire happiness of a man? Why should he despise any part of himself, and that the best part too? And therefore, at least, we ought to take as much care of our souls as of our bodies. Do we adorn our bodies that we may be fit to be seen, and to converse with men, and may receive those respects which are due to our quality and fortune, and shall we not adorn our souls too with those Christian graces which make us lovely in the sight of God and men?—Dean Sherlock.

THE ART OF DECIPHERING THE EFFACED INSCRIPTIONS OF COINS.

It is obvious that we can have no guarantee that specimens of the works of antiquity,—relics of the times gone by,—should pass through the long vale of years, unmutilated, and uncontaminated: for such works were neither laid up for the benefit of the moderns, nor were many of them, individually at least, held to be of extraordinary value at the time of their production. To this number may be referred the coins and medals which were struck by races of people long ago extinct, and which now speak so much for their general history, their manners, customs, laws, religion, and arts.

As we cannot therefore hope to handle a coin clean from the Greek or Roman mint, and as we are naturally curious to know from what part of the entire body, a fragment of antiquity may have fallen off, so, when we hold in our hands a piece of money, used perhaps for the commonest purposes of life, by our terrestrial predecessors of 1500 or 2000 years ago, we are eager to find out from it the nation it once belonged to, the prince whose portrait seems to glimmer through the metallic mist, and all the subsidiary information, which it may furnish, and which our general knowledge of the history of that nation concurs to elucidate. When, therefore, the coin has become much or wholly defaced by accident, or the wear and tear of time, it is evident that any means which shall bring again to light that which has been effaced, are desirable to practise, even if the coin should be so eventually injured; for it is plain that an illegible coin or medal is of no use whatever, beyond its mere weight of metal.

It has been for a long time known that the legend, or inscription, on a worn-out coin may be traced and deciphered by putting the coin on a hot iron. It is not known who first made this discovery, nor was an explanation of this fact ever afforded until very lately.

When the coin is laid upon a red-hot iron, an oxidation takes place over its whole surface. The term *oxidation* implies a combination of the metal with the oxygen of the atmosphere; and the oxidized portion therefore, covers the metal like a thin plate, depending for the colour or tint which it assumes upon its thickness. The film of oxide produced by laying the coin upon a hot iron changes its tint with the intensity or continuance of the heat. The parts, however, where the figure or the letters of the inscription had existed, oxidate at a different rate from the surrounding parts; so that these letters exhibit their shapes, and become legible in consequence of the film of oxide which covers them having a different thickness, and therefore reflecting a different tint from that of the adjacent parts*. The tints thus developed sometimes pass through many orders of brilliant colours, particularly pink and green, and settle in a bronze, and sometimes in a black tint, which rests upon the figure and inscription alone. In some cases the tint left on the trace of the letters is so very faint that it can but just be seen, and may be entirely removed by a slight rub of the finger.

The curious results obtained in the manner just described, are thus accounted for by Sir David Brewster. When we take a plane disk of silver, that has never been hammered or compressed, its surface will oxidate equally,

* For the colours of thin plates, as depending upon their thickness, see the papers on the Soap-Bubble, Vol. XV. p. 199 *et seq.*

if all its parts be equally heated. But, in the process of converting this disk into a coin, the sunk parts are those which were most compressed by the prominent parts of the die; and the elevated parts are those which were least compressed; the metal being in the latter condition left, as it were, more in its natural state. The raised letters and figures on a coin have, therefore, less density than the other parts, and these parts oxidate sooner or at a lower temperature. When the letters of the legend are worn off by friction, the parts immediately below them have also less density than the surrounding metal; and the site, as it were, of the letters therefore, receives from heat a degree of oxidation, and a colour, different from that of the surrounding surface. Hence ensues the revival of the invisible letters by unequal oxidation.

The influence of the difference of density may likewise be observed in the beautiful oxidations which are produced on the surface of highly polished steel, heated in contact with air, at temperatures between 430° and 630°. When the steel has hard portions, called by the workmen, *pins*, the uniform tint of the film of oxide stops near these hard portions, which always exhibit colours different from those of the rest of the mass. These parts, owing to their greater density, absorb oxygen from the air in a less degree than the surrounding portions. The steel, then expanded by heat, absorbs oxygen, which, being united with the metal, forms the coloured film. As the heat increases, a greater quantity of oxygen is absorbed, and the film increases in thickness.

When the experiment is often repeated with the same coin, and the oxidations successively removed after each experiment, the film of oxide continues to diminish, and at last, ceases to appear at all; but it recovers the property in the course of time. When the coin is put upon the hot iron, and when the oxidation is greatest, a smoke arises from the coin, which diminishes, like the film of oxide, by constant repetition. Sir David Brewster has found from many trials that it is always the raised parts of a coin, and in modern coins the elevated ledge round the inscription, that first become oxidated.

There is a very curious experiment connected with this subject, which goes beyond anything hitherto related. This to take a silver coin, (which answers the purpose best), and after polishing the surface as much as possible, to make the raised parts rough by the action of an acid, the sunk parts being left clean, and polished. If the coin thus prepared be placed upon a mass of red-hot iron, and removed into a dark room, the inscription upon it will become more luminous than the rest, so that it may be distinctly read off. The coin should be viewed, during this experiment, through a tube blackened on the inside; by which means the eye will be in a fitter state for observing the effect, and will be somewhat protected from the heat and smoke. If, instead of polishing the depressed parts, and roughening the raised parts of the coin, we polish the raised parts, and roughen the depressed parts, the inscription and figure will be less luminous than the depressed parts; but we shall be able to distinguish them, from their seeming to be traced in black characters on a white ground. The different appearances of a coin, according as the raised parts are polished or roughened, are shown in the figures at the head of this article. In the left hand cut, the raised parts are polished: in the right hand cut they are roughened.

The most surprising form of this experiment is when we use a coin from which the inscription has been either wholly obliterated, or so much obliterated as to be illegible: such are the shillings and sixpences of the last generation: those of England, France, and Spain, serve the purpose of the experiment very nicely. The results with copper coins are more difficult to obtain, and are less palpable: but when we lay a silver coin upon the red-hot iron, the places of the letters and figures become oxidated, and the film of oxide radiating more powerfully than the rest of the coin will be more luminous than the other parts; so that the inscription, illegible before, may be now distinctly read. The acid is not absolutely necessary to this experiment, when using a thin silver coin.

To understand the reason why inscriptions become legible in the dark, whether the coin is in a perfect state, or the letters of it are worn off, we must remember that all black or rough surfaces radiate light more than polished or smooth surfaces; and hence the inscription is luminous when it is rough, and obscure when it is polished; and the letters covered with black oxide are more luminous than the adjacent parts, on account of the superior radiation of light by the black oxide which covers them.

Sir David Brewster suggests that by means such as these, invisible writing might be conveyed from one place to another, by impressing it upon a metallic surface, and afterwards erasing it by grinding and polishing that surface quite smooth. When exposed to the requisite degree of heat, the secret writing would start forth in oxidated letters.

Some old coins, when being heated, have given out brilliant red globules, accompanied with a smell of sulphur; and sometimes, small globules, like those of quicksilver, have exuded from the surface. Some coins give out an intolerable smell; and an Indian pagoda became perfectly black, when placed upon the heated iron. These results are due to the impurity of the metal and the nature of the alloy.

The cut at the head of this article shows the reverse of a Roman coin of the second century, in which the province of Britain is personified. The figure BRITANNIA is found upon many other Roman coins, which were struck for Britain, and has been now used in the English copper coinage for 168 years past. The legend implies that the emperor Commodus, whose bust is on the obverse, was "Pontifex Maximus,"—"in the 10th year of his tribunal authority,"—"in the 7th year of his reign," or A.D. 186,—and, "in the 4th year of his consulship:"—also, that he was "Father of his country."

BOUND up amid the thousand ties
Of man's mysterious sympathies,
Is that strange feeling, that hath birth
While, gazing on our parent earth,
The spirit to itself transfers
The sunshine or the gloom of hers.
Who hath not felt the peace that lies
On fields that smile 'neath summer skies?
Who to th' eternal hymn of ocean
Responds not with as pure devotion,
Nor drinks a joy of sterner mood
From rugged hill or pathless wood?—HANKINSON.

WHEN Smeaton had reflected long, in search of that form which would be best fitted to resist the combined action of wind and waves, he found it in the trunk of the oak. When Watt was employed to conduct the supply of water across the Clyde to the city of Glasgow, he borrowed his admirable contrivance of a flexible water-main from considering the flexibility of the lobster's tail; and so, when Mr. Brunel was engaged in superintending the construction of the tunnel under the Thames, it was from observing the head of an apparently insignificant insect, that he derived his first conception of the ingenious shield, which he introduced in advance of the workmen, to protect them from being crushed by the falling in of the earth. It becomes us, then, while we trace the operations of human ingenuity in adapting means to its proposed ends, to raise our thoughts to that Divine architect who has imprinted traces of his wisdom and power on all his works: causing the heavens to declare his glory, and the earth, throughout all its domains of land, sea, and air, to show forth his handiwork.—DR. POTTER.

RURAL SPORTS FOR THE MONTHS
DECEMBER.

We have chosen the Ptarmigan as the subject of our present article, not because the pursuit of that bird is esteemed by sportsmen as deserving particular notice,—on the contrary, it is characterised as a tame and uninteresting sport, requiring little enterprise, and gaining little merit,—but that we may draw the attention of our readers to some remarkable circumstances in the natural history of this tenant of the regions of frost and snow.

The ptarmigan belongs to the grouse family, and is sometimes called the "white grouse." Its home is near the tops of elevated mountains, and it seems so averse to the kindly influence of the sun's rays, that as soon as the snow begins to melt on the sides of the hills, it ascends still higher, until it gains the summit, where it forms holes, and burrows in the snow. Most of the Alpine districts of Europe abound in ptarmigans, and even as far north as Greenland they are very numerous. The Greenlanders catch them in nooses dropped over their necks, and account them a great luxury: they eat them, either dressed or raw, and do not object to them in a decaying state; the intestines are reckoned a great delicacy, and are eaten with train-oil and berries. The Greenland women adorn themselves with the tail feathers of the bird, and the men wear shirts made of the skins, with the feathers next the body. The Laplanders take these birds by making a hedge of birch branches with small openings at intervals. In each of these openings is a snare, and the ptarmigans in their search after the young buds and catkins of the trees are easily caught.

The Hudson's Bay ptarmigan, otherwise called the *willow partridge*, is remarkable on account of the immense numbers which are taken. Their flesh is much esteemed by the Europeans of the settlement, and they are said to be as tame as chickens. The usual mode of taking them is by fixing a net twenty feet square, to four poles, and by means of a rope fastened to these props to have the power of pulling down the net at any moment. Persons are employed to drive the birds in the direction of the net, and when a sufficient number are assembled, the concealed manager of the rope lets down the net, and often entraps from fifty to sixty. From November to the end of April it is reckoned that ten thousand of these birds are taken for the use of the settlement. The name of willow partridge has been given to the ptarmigans of that country from their assembling in large flocks at the beginning of October to feed among the willows.

In Britain, this bird is only to be met with on the summits of the highest hills, among the Highlands of Scotland, in the Hebrides and Orkneys, and sometimes on the lofty hills of Cumberland and Wales. We may traverse the heights covered with heather, and still be far below the abode of the ptarmigan. To reach his cliffy and desolate abode you must ascend until, in the language of one of our popular writers,

You begin at last to feel alone, severed entirely from the world of society, of life, and of growth, and committed to the solitude of the ancient hills and immeasurable sky. The snow lies thick on the side of the summit, and even peers over the top, defying the utmost efforts of solstitial heat. There is no plant under your feet, save lichen on the rock, apparently as hard and stony as that to which it adheres—it can hardly be said to grow—and moss in some crevice, undistinguishable from the dull and cold mud into which the storms of many winters have abraded the granite.

And what are the objects which present themselves to notice in this region of snow?

A few mottled pebbles, or at least what appear to be so, each about twice the size of your hand, lie at some distance, where the decomposed rock, and the rudiments of what may be called the most elevated mountain vegetation, just begin to ruffle the surface. By and by, a cloud shadows the sun, the air blows chill as November, and a few drops fall, freezing or melting in their descent, you cannot tell which. The mottled pebbles begin to move: you throw a stone at them, to show that you can move pebbles as well as the mountain. The stone hits beyond them; they run towards your feet as if claiming protection: they are birds,—ptarmigan,—the uppermost tenants of the island, whom not even winds which could uproot forests, and frosts which could all but congeal mercury, can drive from these their mountain haunts. It has often been observed that of all the human inhabitants of the earth, the mountaineer, be his mountain ever so barren, is the last to quit, and the same holds true of the mountain-bird.

The sportsmen who find pleasure in climbing the granite cliffs, and wading the winter snows in which the ptarmigans delight to bury themselves, are few indeed. An excursion of this nature must be regarded as a journey of curiosity, for the purpose of viewing the wilder and more imposing features of our country, rather than as a sporting engagement which is to yield any profitable return. The flesh of the ptarmigan except when taken very early in the season, is much inferior to that of the red-grouse, being less juicy, and deficient in flavour. The chief interest attaching to the bird arises from the peculiarity of its haunts, the simplicity of its habits, and the periodical changes in the colour of its plumage.

The plumage of the ptarmigan has been called "a natural thermometer," on account of its variations in colour with the variations in temperature during the different seasons of the year. The summer plumage is yellow, more or less inclining to brown, and elegantly mottled with black, grey, and white: the quills of the wings, twenty-four in number, have black shafts and white webs. The tail feathers are sixteen in number, seven on each side, and two in the centre, the shafts of which are black. As autumn advances, these colours undergo a gradual change: the black and brown become paler and paler; then the grey fades, until when the winter is fully set in, the whole plumage becomes of a snowy white, except the eye-streak in the male, the outer tail feathers, and the shafts of the middle ones. This change does not take place in consequence of a moult, or falling-off of coloured feathers, to be replaced by white ones; but the change actually takes place in the colour of the feathers themselves, while at the same time the plumage becomes fuller, thicker, and more downy; the bill is almost concealed, and the legs are covered down to the very toes with hair-like feathers.

These changes in colours, have been attributed to a kind provision of nature to enable the birds more effectually to escape their enemies. Now it is certainly true, that the summer vest of the ptarmigan bears some resemblance to the broken tints produced by the brown patches of heath on the mountain slopes, which this bird frequents, and so far screens it from observation: so also does its white livery serve the purpose of concealment when its home is in the snow. But if this be one of the reasons for the change, it is not the principal one. Many of the polar animals, and others which inhabit the colder regions of the temperate zone, undergo a change in colour similar to that of the ptarmigan, and the rapidity of the change has been observed to depend upon the severity of the season. A little attention to the science of heat, will assist us on the present occasion. The temperature of all bodies is greatly influenced by the colour of their surfaces; those which are white reflect most of the heat which falls upon them those that are black absorb it; so that if a white and a black body be exposed to a high temperature, the latter will be heated much sooner than the former. But on the other hand, a white body parts with its heat slowly,—a black body quickly; hence, if both be placed in a low temperature, the latter will cool much sooner than the former. These facts have long been established with respect to inanimate matter, but they apply with equal force to animals: by the healthy performance of certain functions (chiefly, respiration and the circulation

of the blood), heat is constantly supplied, and thus is maintained a temperature necessary to perpetuate the functions of life: a portion of the animal heat always escapes from the surface of the body by radiation: if the heat escape faster than it is formed, the temperature of the animal body will fall to such a point, that it is no longer sufficient to maintain life;—but, if the body be protected by substances which conduct and radiate heat very slowly, such for example as our winter clothing and the feathers, wool and fur of animals, heat escapes less quickly than it is formed, and the animal is thus enabled to inhabit a spot, the temperature of which is greatly below that of its own body.

Not only is the plumage of the ptarmigan adapted by Providence for the peculiar situation in which the bird is placed, but in respect of its general form the same adaptation is apparent. It stands more firmly on its legs than the other birds of its race, and presents but little resistance to the wind, in consequence of its crouching attitude. Its feet and claws, though feathered down to the very toes, are not impeded or encumbered on this account, for the surface of the mountains is generally dry, and pools of water are speedily converted into ice. The bill is remarkably strong, and is well fitted to crush the hard berries, lichens, &c., on which the bird feeds. It is a habit with the gallinidæ in general to swallow gravel, and the proportion found in the stomach of the ptarmigan is said to exceed that of any other bird. In winter these birds congregate, and live peaceably together, sheltering themselves in holes in the earth, or snow, and even burrowing through the latter until they contrive to reach the scanty vegetation lying beneath its surface. About the month of June they disperse in pairs, and make circular nests a little lower down the mountain. The number of their eggs varies from six to twelve or fifteen; and the young birds are covered with down, of a colour similar to that of their parents' summer plumage. This descent of the ptarmigan to a somewhat lower situation during the breeding season, is probably with a view to find more abundant food for their young, but it subjects them to many dangers, which in their more elevated home they had altogether escaped. The old birds are often obliged to fight desperately in defence of their young, and as soon as possible they lead them away to a place of greater security in the mountain tops. Ptarmigans are the favourite food of the great snowy owl, which is also an inhabitant of the most desolate regions of the North. On perceiving this well known and powerful enemy the affrighted birds dive instantly into the loose snow, and make their way beneath it to a considerable distance, In its favourite mountain summit, the ptarmigan has few enemies, being above the range of the fox, the mountain cat, and the martin, and also out of the usual hunting scenes of the raven and the eagle, so that is not so liable to the attacks of these formidable enemies, as are the red grouse, and other tenants of the heathery regions below. As this bird is thus exempted from some of the dangers common to its kind, so is it apparently deficient in sagacity and resource when attacked. The expression of the head is stupid or simple. Mr. Daniel calls them silly birds, that are tame enough to bear driving like poultry, and suffer a stone to be flung at them without their rising; with all this gentleness of disposition, it is however, difficult to domesticate them. Yet in their own regions they soon become reconciled to the sight of man, and may be caught and destroyed by any device he may choose to employ against them. They are so little anxious to hide themselves that a sportsman meeting with a party may shoot them one by one, till he has destroyed them all, the survivors after each discharge making no attempt to get out of the reach of the shot. They never, on any occasion take long flights or soar aloft in the air, but fly by taking a short circle like pigeons.

Another species of ptarmigan, known as the rock ptarmigan, has lately been brought into this country, but it extremely rare. It is somewhat smaller in size, and may be distinguished from the common ptarmigan, by the black feathers of the back being cut into upon the edges, with patches of yellow only; which, contrasted with the larger size and grey plumage of the other, serves to render it conspicuous.

ENTRANCE INTO THE TROPICS.

As we found our way into the Tropics, we observed that the atmosphere became clearer and clearer; no mists were perceptible, the sun seldom obscured, and the appearance of the sky and stars at night peculiarly bright and clear. The moon, in these latitudes, often assumes an almost vertical position; and many of the stars which belong to the southern hemisphere are visible. Before daylight one morning, the captain called me upon deck to look at the Southern Cross; which is certainly a constellation of rare beauty. One of the five stars which form the cross, however, is of inferior magnitude, and not in the true position; which somewhat mars the image. When I turned towards the east, I enjoyed a still finer spectacle. The horn of an almost expiring moon, Venus, and Mars, were in all their splendour: and the profusion of azure, lilac, ultramarine, pea-green, orange, and crimson, which mantled the sky about half an hour before sunrise, I never before saw equalled.—GURNEY.

To ask the question, "What is knowledge?" is but another way of inquiring, "What is God?" for human learning deserves the name of knowledge only in the proportion in which it is able to display the workings of the All-wise Creator in the visible and unseen universe of which we form a part. There is, indeed, a mass of general information that is useful to the individual in his relations to the society of his home and country; but this is, for the most part, confined to transient customs and opinions, and is for ever being swallowed up in that flood of knowledge which has increased from age to age, spreading its waves with a wider sweep through each succeeding generation, and which will ere long embrace in one common bond of intelligence the great human family upon earth.—*Manuscript Letters.*

THE real philosopher, who knows that all the kinds of truth are intimately connected, and that all the best hopes and encouragements which are granted to our nature must be consistent with truth, will be satisfied and confirmed, rather than surprised and disturbed, to find the natural sciences leading him to the borders of a higher region. To him it will appear natural and reasonable, that, after journeying so long among the beautiful and orderly laws by which the universe is governed, we find ourselves at last approaching to a source of order and law, and intellectual beauty:—that, after venturing into the region of life, and feeling, and will, we are led to believe the fountain of life, and will, not to be itself unintelligent and dead, but to be a living mind, a power which aims as well as acts. To us this doctrine appears like the natural cadence of the tones to which we have so long been listening; and without such a final strain our ears would have been left craving and unsatisfied. We have been lingering long amid the harmonies of law and symmetry, constancy and development; and these notes, though their music was sweet and deep, must too often have sounded to the ear of our moral nature, as vague and unmeaning melodies, floating in the air around us, but conveying no definite thought, moulded into no intelligible announcement. But one passage which we have again and again caught by snatches, though sometimes interrupted and lost, at last swells in our ears full, clear, and decided; and the religious "Hymn in honour of the Creator," to which Galen so gladly lent his voice, and in which the best physiologists of succeeding times have ever joined, is filled into a richer and deeper harmony by the greatest philosophers of these later days, and will roll on hereafter, the "perpetual song" of the temple of science.—*History of the Inductive Sciences, by the* REV. WILLIAM WHEWELL.

LONDON:

JOHN WILLIAM PARKER, WEST STRAND.

PUBLISHED IN WEEKLY NUMBERS, PRICE ONE PENNY, AND IN MONTHLY PARTS, PRICE SIXPENCE.

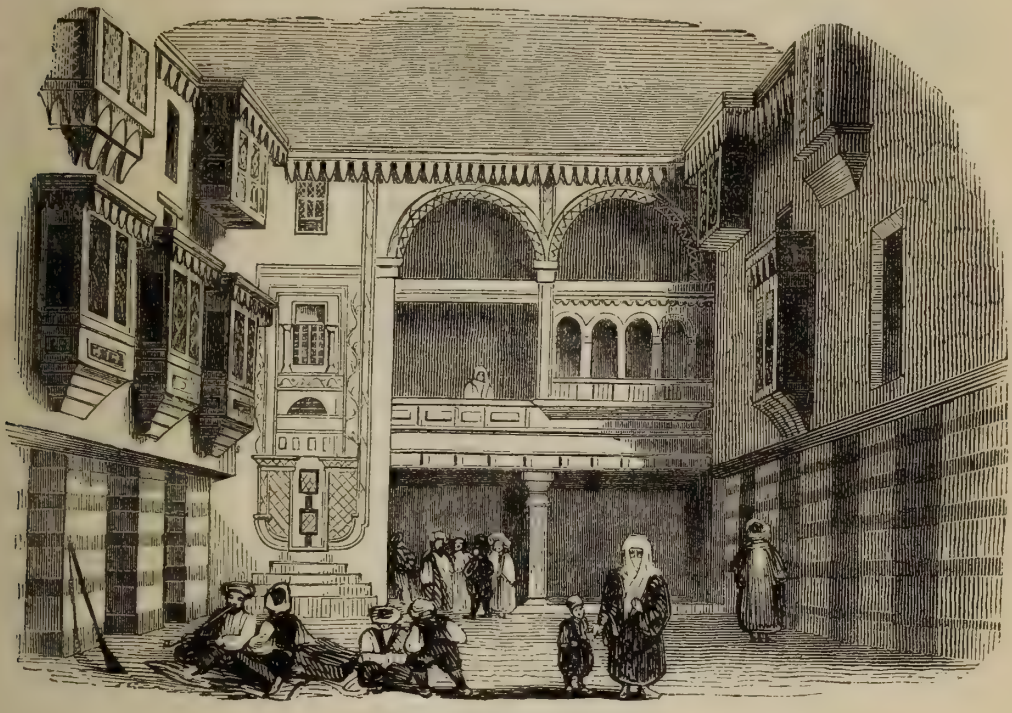
Sold by all Booksellers and Newsvenders in the Kingdom.

THE

Saturday Magazine.

No. 609. SUPPLEMENT, DECEMBER, 1841. { PRICE ONE PENNY.

THE HOUSES OF ALL NATIONS. III.



INTERIOR OF AN ORIENTAL HOUSE.

1. Houses of Northern Africa and Egypt.

The inhabitants of Northern Africa have for several centuries been connected together by certain ties which enable us for some purposes to consider them as one people. Morocco, Tunis, Fez, and till lately Algiers, have all had Mohammedanism as the recognised religion of the state. Their mosques are similar, their manners are similar, and, as may be supposed, their dwellings also belong, in their general characters, to one class. All the countries which we have mentioned, lie pretty nearly under the same latitude, and are exposed to about an equal temperature, a circumstance that has much influence on the form of the buildings. Under the general name of *Barbary*, therefore, we will now consider the principal features in the houses of the better classes of the inhabitants.

Large doors, spacious chambers, marble pavements, cloistered courts, and fountains, are very general in these countries, and accord well with the nature of the climate. The windows, too, open not into the street, but into the central courts or quadrangles, a type of the jealous dispositions of the inhabitants. The streets are generally narrow, probably to shield the houses as much as possible from the sun. The entrance to a house from the street is through a porch or gateway, with benches on each side, where the master of the family receives visits and despatches business. From hence an opening is seen into the quadrangle or court, which is open above, and is generally paved with marble. When a large assembly is to be received, such as upon the occasion of any grand entertainment, the court is the place of reception, where mats and carpets are spread for the company. It has been supposed by Dr. Shaw, that on most of the occasions when our Saviour and his apostles are said to have entered houses and preached there, &c., the court or quadrangle was the place of reception; for there are many points of resemblance between the houses of Judæa and those of Barbary

In the warm season, this court is covered by an awning to protect the visitors from the heat of sun: this awning is stretched out by ropes, and can be folded or drawn out at pleasure. The court is generally surrounded with a colonnade, over which there is a gallery of the same width as the colonnade, with a balustrade or lattice-work in front of it. From the colonnade and gallery there are openings into large spacious chambers, of the same length with the court, but seldom communicating with one another. One of them frequently serves for a whole family, particularly when a father allows his married children to live in the same house with him, or when two or more persons join in the rental of one house. The walls of these chambers, in the houses of the wealthy, are covered, from the middle downwards, with white, blue, red or green hangings, either of velvet or of damask: these are suspended by hooks, so as to be taken down at pleasure. Above these hangings is a more permanent covering for the wall, such as stucco, fretwork, paintings, &c. The ceiling is generally of wainscot, and painted in various devices, frequently including sentences from the Koran. The floors are generally covered with painted tiles: but as the Moors seldom use any sort of seat equivalent to our chair, the floor is covered with carpets and mats of rich materials, on which the inmates either sit cross-legged or lie at full length. Near the wall, however, is frequently placed a kind of raised platform, on which are narrow beds or mattresses, as well as pillows.

The stairs to the upper story, when there is more than one, are situated sometimes in the porch, and at others in the court. This staircase leads not only to the upper story, but also to the gallery and to the roof of the house, where the Moors pass much of their time in the evening. The flat roofs are covered with plaster, and are surrounded either by low walls or by balustrades. The terraces serve for many domestic purposes for the use of the inmates: linen is dried there: figs and raisins are exposed there to the heat of the sun: it is also frequently used as a place of devotion.

Many of these houses have a smaller one attached to them, consisting of one or two rooms and a terrace. Some of them are built over the porch or gateway of the larger house, to which there is a door of communication. These smaller houses are frequently used as places of retirement from the bustle of the central quadrangle. It has been supposed that many of the houses in Syria, Palestine, &c., were anciently provided with little retired chambers such as we here speak of,—that is, chambers secluded in some degree from the rest of the habitable mansion. The following passages in the Bible seem to allude to some arrangement of this kind: 2 Kings 4. 10, "Let us make a little chamber, I pray thee, on the wall; and let us set for him there a bed, and a table, and a stool, and a candlestick,"—Judges iii. 20, "And Ehud came unto him; and he was sitting in a summer parlour, which he had for himself alone."—2 Sam. xviii. 23, "And the king was much moved, and went up to the chamber over the gate, and wept." While we are on this subject, we may briefly allude to an explanation which Dr. Shaw has offered of a part of Scripture, which, without knowing the structure of the houses in the countries alluded to, cannot be well understood. In St. Mark ii. 2, we read, "And they came unto him bringing one sick of the palsy, which was borne by four. And when they could not come nigh unto him for the press, they uncovered the roof where he was: and when they had broken it up, they let down the bed wherein the sick of the palsy lay." Now in such houses as we are accustomed to, it would appear more difficult to make a sufficiently large hole through the roof than to force a passage through the throng. But by considering the nature of the houses in those climates, Dr. Shaw thinks the following explanation will remove every difficulty. The only part of a house large enough to admit a multitude of people was the open court or quadrangle. This court was covered in hot weather by an awning capable of being drawn aside by means of ropes. The tops of the houses were flat, so that persons could walk from roof to roof without difficulty, and stairs led up to the roof. It therefore seems probable, that the sick man was carried up to the roof of the house, that the awning was drawn aside, and that he was lowered into the open court by ropes.

That portion of Northern Africa occupied by Algiers need not claim our attention here, for in so far as it differs, in the construction of its houses, from the countries of Barbary generally, the Supplements which have been given on the subject of Algiers in the *Saturday Magazine* will have conveyed a sufficient idea. We will therefore proceed eastward, and approach countries which have filled a more important page in history. The territory once known by the famed name of Carthage occupied a portion of the space between Egypt and what is now called Algiers, but at present, little exists here to claim notice in this paper.

Egypt has many remarkable peculiarities, chiefly arising from the mixture of Turkish and Arabic manners and modes of living prevalent in the country. The houses of Egypt depend a good deal, for their form and character, on the religion of the inhabitants; they have in general either one or two stories above the ground floor, and there is often a small unpaved court in the middle of the building, with various apartments surrounding it. There is a narrow passage leading into this court from the street, and in the passage is a stone seat for the porter and other servants. In the court itself is generally to be seen a well for supplying the house with water; and the windows of the principal apartments look into the court, several doors leading from the court to the rooms: in all these cases there is one door leading exclusively to the women's apartments. The apartment in which strangers are received is generally on the ground floor, with a grated or latticed window looking into the court. This reception-room has generally a fountain in the middle, and is paved with black and white marble. Along two sides of the room runs a raised platform covered with mats and carpets, and visitors generally take off their shoes before they step upon this. The mode in which persons seat themselves in such countries will assist us in explaining many of the customs mentioned in the Holy Scriptures. The matted or carpetted floor is frequently the only seat, and if shoes, soiled with the dust of the streets, were to tread on this matting, the garments would certainly be disfigured by it: hence a sense of cleanliness, as well as certain rites connected with religion, lead the inhabitants to take off their shoes previous to stepping upon the raised platform. There are, however, frequently mattrasses and cushions, stuffed with cotton and covered with cloth or silk, ranged round the sides of the apartment. The walls of this apartment contain recesses and cupboards, for the reception of water-bottles, coffee-cups, and other domestic vessels. The ceiling of the room is divided into compartments: those parts over the two raised platforms being formed of carved beams of wood; while that over the central part is carved into highly decorated and fanciful ornaments, and painted of very diverse colours. A chandelier is frequently suspended from the centre.

All the apartments are lofty, generally about fourteen feet high. The upper rooms have often, besides lattice-work windows, others of coloured glass, representing flowers, fruit, birds, &c. These coloured windows are about two feet high and one wide: they are placed above the other windows, and are more for ornament than for use. "On the plastered walls of some apartments," says Mr. Lane, "are rude paintings of the temple of Mekkeh, or of the tomb of the Prophet, or of flowers and other objects, executed by native Mooslim artists, who have not the least notion of the rules of perspective, and who consequently deface what they thus attempt to decorate. Sometimes, also, the walls are ornamented with Arabic inscriptions, of maxims, &c, which are more usually written on paper, in an embellished style, and inclosed in glazed frames. No chambers are furnished as bed-rooms. The bed, in the day-time, is rolled up, and placed on one side, or in an adjoining closet, called khuzneh, which, in the winter, is a sleeping place: in summer, many people sleep upon the house-top. A mat or carpet, spread upon the raised part of the stone floor, and a deewan, (a row of cushions round the wall,) constitute the complete furniture of a room. For meals, a round tray is brought in, and placed upon a low stool, and the company sit round it on the ground. There is no fireplace: the room is warmed, when necessary, by burning charcoal in a chafing-dish." The kitchens, however, have several small receptacles for fire, constructed on a kind of bench of brick. Many houses have at the top a sloping shed of boards, directed towards the north or north-west, in order that the cool breezes which blow from those quarters may be conveyed to an open apartment below. The roof of the house is flat, and generally covered with a coating of plaster.

For a notice of the houses and domestic arrangements of Cairo in particular, we refer to our recent sketches of that capital.

2. Houses of Asiatic Turkey.

Africa is united to Asia in a singular manner. The two continents are connected only by a narrow slip of land,—the isthmus of Suez,—and this isthmus, as well as the country near it, is little better than a dreary desert. Having passed this desert, we come to Palestine, and, keeping along the eastern shore of the Mediterranean Sea, we arrive at Jaffa, Acre, Aleppo, and other towns. After this, the great peninsula of Asia Minor brings us to the Black Sea, and the provinces of European Turkey. Now throughout this range of country, Turkish influence is more or less prevalent, and there are a good many features common to all the towns extending from Jerusalem at the south-east to Smyrna at the north-west. The city of Aleppo is well situated as a representative of the towns of Western Asia generally. To the north of it is Asia Minor: to the south, Palestine; and to the east, are those numerous provinces which have, at one time or other, formed part of the Persian Empire. Its houses, as well as its inhabitants, present features of the Turkish, Persian, Syriac, and Arabian countries: and we shall do well to consider rather minutely the nature of the dwellings.

Aleppo is governed by a bashaw or officer, and the residence of this officer, as well as of the other principal officers of state, are called *Seraglios*, (a Persian word for a palace or great house.) These seraglios are huge piles of building, with nothing like architectural grace about them. The entrance is through a large court; and the gate is arched and decorated with marble. Persons of rank pass on horseback directly to the foot of the grand staircase. The state apartments are of an oblong form, with lofty flat ceilings, and are well lighted by a row of large windows. The walls and ceilings are adorned with flowers, fruit, and fanciful ornaments, painted, gilt and varnished: and verses from the Koran are seldom omitted as part of the decoration. Each state apartment has an elevated platform on each side constituting a *divan*, where distinguished visitors are invited to seat themselves. The divan is covered with mattresses, over which is thrown a covering of cloth; and oblong cushions, stuffed with cotton and faced with silk or velvet, are ranged round next the wall:—the *corners* of

these divans are considered as the places of honour. The lower and central part of the apartment is occupied by pages and others; indeed all visitors, except those of rank, are to remain on the central division of the room, and must not presume to step on the divan.

The apartments of the principal officers are fitted up on the same plan, but with less splendour: the divans in their rooms being made to serve as beds at night, by employing additional mattrasses and coverlids.

The women's apartments are always separated from the main part of the building, and consist of several suites of rooms, ranged round an open court. This court contains a shrubbery, a basin with a fountain, arbours of slight latticed frames, and other arrangements for producing a cool place of retreat from the heat incident to the climate. There are also two open apartments, called the *divan*, and the *kaah*, which are a sort of open reception rooms, where the different members of a family may congregate. These are particularly delightful, from the means taken,—such as fountains, &c.,—to make them cool. The private apartments of the females are ranged round the court, with windows looking into the court, to the exclusion of any other. The sleeping rooms are usually on the ground floor, and the visiting, or reception rooms are above them.

Such are the general modes of construction in the mansions of the bashaws, agas, effendis, and officers of government, at Aleppo.

The houses of the merchants seldom have a court in front, the entrance being immediately from the street, by a large door. The outer apartments are small, and furnished in a plain but neat manner. They serve only for the reception of familiar visitors in the morning, or at supper: for on extraordinary occasions, the harems, or female apartments, are made use of, which, in point of elegance, often rival those of the seraglios, and in the richness of the furniture sometimes excel them.

The houses of the Turks of middle rank have seldom more than one court; but many of them have a kaah, and all have a divan, with a little garden and fountain before it. Their habitations are thus airy, and kept very neat. From this rank, down to the lowest order of Turks, there are houses of various degrees of comfort; but they have nearly all something which they can call a divan, and a few bushes or shrubs by way of garden:—their best room is rudely painted, and decorated with such ornaments as they can procure.

The houses of the Christians of the upper class consist generally of a central court surrounded by apartments. The entrance to these houses is scarcely to be distinguished from those of the Turks; and the interior is fitted up with a good deal of taste and neatness.

The Jews, both European and native, have houses built much on the same fashion as the other inhabitants of the city; and in some instances their dwellings display no little magnificence within. The poorer classes of Jews, however, are worse lodged than the poor of the other religious communities.

The roofs of nearly all the better kinds of houses are flat, and plastered with a composition of mortar, tar, ashes, and sand, which in time becomes very hard; but, when not laid on at the proper season, the terrace is apt to crack in the winter. These flat roofs or terraces are separated by parapet walls, and most of the natives sleep on them in summer. The Europeans who live contiguous have doors of communication, and by means of the terraces on their own houses and those on the bazaars, can make a large circuit without descending into the street. The native inhabitants, however, do not throw open a whole line of terraces in this way; but frequently heighten the wall of division by means of a screen.

We will avail ourselves of the present opportunity for speaking of a part of the domestic arrangement which in warm climates has a considerable influence on the construction of a town, as well as upon the manners of the inhabitants,—we mean the custom of bathing. Not only does a sultry climate occasion a necessity for a frequent use of the bath, but the Mohammedan religion requires that ablutions should be made at certain hours of the day. Most of the large mansions in Persia, Turkey, Syria, Egypt, Barbary, &c., have baths within them; but the general custom is, to attend public baths, a large number of which are to be found in most of their cities. These baths or bagnios being pretty nearly the same everywhere, we will take those of Aleppo as a general representative of all, and will avail ourselves of Dr. Russell's account of them.

The outer room of the hummam or bagnio is called the *burany*, and is large, lofty, covered with a dome, and paved with marble. It has windows towards the street, but is lighted chiefly by the lantern of the dome. A broad stone platform, or *mustaby*, about four feet high, is built close to the wall on each side, which being spread with mats and carpets, forms a divan on which the bathers may undress and repose. A large marble fountain in the middle serves both as an ornament, and for rinsing the bagnio linen, which is afterwards hung to dry on lines stretched above. The bathers, as well as the servants, walk in this outer chamber in slippers, for the stoves having but small influence there, the wet pavement is cold to the naked feet.

From the *burany* a door opens into a narrow passage, leading to the *wastany*, or middle chamber, which has a *mustaby*, or raised platform, for the accommodation of such as may choose to sit there, and is furnished with several round or oblong stone basins, about a foot and a half in diameter, into each of which two pipes open with brass cocks, the one conveying hot, the other cold water. These are called *jüru*, and are fixed to the wall two feet from the pavement. There are also brazen bowls for laving out the water. The thermometer in the burany is about 64° Fahr.;—in the passage 75°—and in the wastany, or middle chamber, 90°.

From the middle chamber, a door opens immediately into the inner chamber, or *juany*, which is much larger than the wustany, and heated to about 100°. It has no *mustaby*, or platform, so that the bathers sit or recline on the pavement, which towards the centre is excessively hot. The middle and inner rooms are less lofty than the outer one, and are covered with small cupolas, from which they receive a dull light, by means of a few round apertures, glazed with a thick coloured glass. At each corner of the juany is a small open recess, in one of which there is a basin about four feet deep, called the *murtas*, serving occasionally for a temperate bath. The bagnios are heated by stoves underneath, and the ordinary temperature is about 100°.

It must be borne in mind, that the mode of bathing adopted in these countries is altogether different from that employed in England. There is no plunging into a large body of water, and in a few minutes emerging from it. The bather, first, in the outer room, throws off his usual dress, and puts on a slight bathing dress. He then passes into the middle room, and gets gradually warmed by its temperature. From thence he passes into the inner or bath room, which is heated so highly that in a few minutes he is in a profuse perspiration. He then lies down on the warm marble pavement, and is rubbed all over by an attendant, with a kind of perfumed soap; after which he is well drenched by bowls of warm clean water, and rubbed with dry towels. The bathing being thus completed, he passes into the middle room, puts on his slippers, wraps himself completely in a blanket, and then smokes a cigar, drinks coffee, and converses with his friends or neighbours:—indeed, this middle room is a general place of rendezvous for friends, who often go to the bath as much to meet one another as for the pleasure of bathing. This is particularly the case with females: by the customs of the country they are so much immured, that they are glad of the relief from constraint afforded by the bath; and it is not unusual for them to take sweetmeats, fruits, spices, &c., to regale themselves and friends in the middle chamber, after having taken the bath. Lady M. W. Montagu tells us that this is then a famous place for gossip. When the bathers have remained as long as they please in the middle room, they proceed to the outer room, resume their dresses, and leave the place. There are some baths for men, and others for women; and a third class devoted to women in the forenoon, and men in the afternoon; the bathers being attended by servants of their own sex.

3. Houses of Persia and Arabia.

The most general characteristics of the houses of the wealthier classes in Persia have been the same from age to age, and the accounts of different travellers pretty well agree on the subject. Generally speaking, such houses are built in the middle of a fine garden, and present little or none of their beauty to the street; for there is little else to be seen but a dead wall, with a great gate in the middle of it, and perhaps a screen or wall within the gate, to prevent passers-by from seeing the mansion,—great privacy being sought for in this respect. It is not often that the Persian mansions have more than one story,—indeed, in most warm climates, the houses are more remarkable for length and depth than for height. In the portion of the house nearest the entrance gate is generally a little piazza

or open room, where the general business of the inhabitant is transacted. Beyond this piazza is a large hall, from twelve to twenty feet high, which is the place of meeting, on the occasion of great entertainments, &c. On the hinder side of the house is often another piazza, with a fountain playing in front of it, beyond which shady walks are frequently seen. At each corner of the large hall is a parlour, or dwelling room, between which are small open square courts, with entrances from the great hall: the object of this and similar arrangements seems to be, that in a climate so sultry as that of Persia, it is desirable to have as many open doors as possible, to admit air into the central hall: there is often a fountain playing in the middle of the hall.

The walls of the houses are built sometimes of burned bricks, and sometimes of bricks dried in the sun. The walls are of considerable thickness, and the roof of the great hall is arched, and some feet higher than the smaller rooms near it. The roofs of the buildings on every side of the hall are flat, and have stairs leading up to them. These flat roofs form one of the most distinguishing features of Asiatic dwellings. Nothing can exceed the beauty of the sky at those hours of the evening when the sun has withdrawn his scorching rays. It is at such a time that the Persian, taking up a mattrass to the roof, there luxuriates in the indolent enjoyment of the open air:—often, indeed, he passes the night there, except at certain seasons, when, in consequence of the powerful evaporation during the day, a piercing cold is felt at night.

The kitchens, and other domestic offices of the house, are generally at some distance to the right or left, and the hall is the medium of communication between all of them. Sometimes the rooms have chimneys, but at other times there is an arrangement of a charcoal fire thus managed:—A hole, four or five feet in diameter, and one or two deep, is sunk in the floor of the room, and in this is kindled a charcoal fire. The hole is covered over with a thick board, and this again is covered with a carpet, so that persons by sitting round in a circle, and placing their feet under the carpet, can keep themselves warm in cold weather. Air is admitted to the fire, and smoke is conducted from it, by pipes laid beneath the floor. The floors of the rooms are either paved, or covered with a hard cement, on which a coarse cloth is laid, and over that a carpet. The walls of some of the rooms are lined with fine tiles a part of the way up, and are painted above.

Such are the general characters of the houses in that wide expanse of country included under the general name of Persia. But it must be here understood, that these remarks apply chiefly to the large towns; for in the wide and uncultivated wastes which cover so large a portion of the Persian empire, the same kind of rude and temporary tents are observable as are employed by the roving Arabs. In a country like England, we happily do not know what it is to have our large towns separated from each other by sandy wastes, where neither man nor beast can find food and water without great difficulty:—the arrangements of a manufacturing town and those of an agricultural village are certainly sufficiently distinct; but still, a roving population, who, when they have gathered all the herbage and fruits at one part of the country, strike their tents, and proceed in a body to another locality, is unknown to us, however much it prevails in Persia.

These remarks apply also to Arabia. We have, however, nothing to say here of the roving tribes, but shall briefly speak of the populous towns. The city of Mecca consists of streets arranged with tolerable regularity, and there is something more pleasing in the fronts of the houses than is usually observed in Oriental towns. The houses have generally two rows of windows, with balconies covered with blinds. There are even several large windows, quite open, as in Europe, but the greater number are covered with a curtain, like a Venetian blind, made of palm-leaves: these blinds are extremely light, and screen the apartments from the sun, without interrupting the passage of the air: they fold up at pleasure at the upper part. The houses are solidly built with stone, and are three, four, and even more stories in height. The fronts are ornamented with bases, mouldings, and paintings, which give them a very graceful appearance. It is very rare to find a door that has not a base, with steps and small seats on both sides. The blinds of the balconies are not very close, and holes are cut in different parts of them. The roofs of the houses form terraces, surrounded with a wall about seven feet high, open at certain spaces which are occupied by a railing of red and white bricks, placed symmetrically, leaving holes for the circulation of the air. All the staircases are narrow, dark, and steep. The rooms are well-proportioned, large, and lofty, and have, besides the large windows and balconies, a second row of smaller windows. The beauty of the houses may be considered as the remains of the ancient splendour of Mecca. Every inhabitant has an interest in adorning his dwelling, in order to induce the hadgi, or pilgrims, to lodge with him during their sojourn at Mecca, for this is one of the principal sources of wealth to the inhabitants, on account of the high terms demanded and paid.

Another town in Arabia of which we may briefly speak is Mocha, a name rendered familiar to us by the excellent coffee brought from its neighbourhood. In this town the principal buildings, such as the residences of the government officers and principal inhabitants, have no pretensions, externally, to architectural elegance, but still are not devoid of beauty, from their turretted tops and fantastic ornaments in white stucco. The windows are in general small, stuck into the wall in an irregular manner, closed with lattices, and sometimes opening into a wooden, carved-work balcony. In the upper apartments there is generally a range of circular windows, above the others, filled, instead of glass, with a thin layer of a peculiar transparent stone, which is found in veins in a mountain near Sanaa. None of these can be opened, and only a few of the lower ones,—a consequence of which is that a thorough current of fresh air is rare in these houses, yet the people who inhabit them do not appear to be oppressed by the heat, although it is insupportable to European visitors. The floors as well as the roofs of the larger houses are made of *chunam*, which is sustained by beams with pieces of plank or thin slips of wood, laid across and close to each other. As a carpenter's level is seldom used in their buildings, the floors are generally very uneven; but where couches and cushions are used instead of chairs and tables, this is not felt to be much inconvenience. The internal construction of the houses is generally bad: the passages are long and narrow, and the staircases so steep that it is frequently difficult to mount them. Very little time is used in the construction of any of these buildings: constant care is therefore necessary to prevent the introduction of moisture. With caution, the houses last many years, but if neglected, they soon become a heap of rubbish, for the sun-dried bricks then resume their original form of mud.

The streets and bazaars of Mocha present a lively appearance, from the commingling of many different classes and ranks of people. Lord Valentia says:—"Under the coarse awnings of its narrow bazaars you meet the well-dressed merchants in robes of woollen cloth, and from above the folds of the snow-white turban you see a red woollen cap, with a tassel of purple silk. At every step you meet the black, the half-naked Abyssinian, straight as the young areca, with a nose sufficiently prominent to give expression to his features, and having his curled woolly hair dyed with a reddish yellow,—the foppery of his country. Then there is the stout Arab porter, in his coarse brown garment, bowing under a heavy load of dates, the matting all oozing, and clammy with the luscious burden. Lastly, you have the Bedouin, with the hue of the desert on his cheek, the sinewy limb, the eye dark and fiery. He hath a small turban, a close-bodied vest, a coarse sash, all of dull colours; the arm, the leg, are bare; the brown bosom, open to the sun and wind; sandals on his feet; a broad, straight, two-edged sword in his hand; a long and ready poniard in his girdle. For the cold night wind he has a cloak of goat's hair, or black or white, or made in long broad stripes of both colours. He walks erect, and moves directly to his front, giving place to none. . . . . Then there are the cook-shops, with their hot cakes of bread, and their large coppers, with portions of meat and fowls, swimming in ghee, and ready for the traveller. And a step farther the caravanserais and coffee-houses, with groups of townsmen and traders, reclining on couches of the date-leaf, smoking their small hookahs, sipping their kishu, and perpetually stroking their long beards." There are other towns in Arabia, such as Medina, and Aden, once a very important port at the southern entrance into the Red Sea. But neither of these need call for particular notice here: Medina presents many features similar to Mecca, and Aden to Mocha.

4. Houses of India and China.

We will travel eastward, and notice the recent seat of war, Afghanistan.—The houses of the higher classes in Afghanistan are described with some minuteness by the Hon. Mountstuart Elphinstone, in his *Account of the Kingdom of*

INDIAN MOUNTAIN DWELLING.

Caubul. The class of inhabitants whose dwellings he thus portrays, includes all the Douranee chiefs and heads of tribes, with the Persians and Tanjiks, who hold offices about the king. "These residences," says our author, "are all enclosed by high walls, and contain (besides stables, lodging for servants, &c.,) three or four different courts, generally laid out in gardens, with ponds and fountains. One side of each court is occupied by a building, comprising various small apartments in two or three stories, and some large halls, which occupy the middle of the building for its whole height. The halls are supported by tall wooden pillars and Moorish arches, carved, ornamented, and painted like the rest of the hall. The upper rooms open on the halls by galleries which run along halfway up the wall, and are set off with pillars and arches. The halls, being only separated by pillars and sashes of open wood-work, can always be thrown into one by removing the sashes. The back of the innermost one is a solid wall, in which is the fire-place. The upper part of this wall is ornamented with false arches, which look like a continuation of the galleries, and which, as well as the real arches, are filled up on great occasions with paintings in oil, looking-glasses, and other ornaments. There are smaller rooms along the other sides of the court-yards; and among them are comfortable apartments for the retirement of the master of the house, one of which, at least, is fitted up with glass windows for cold weather. There are fire-places in many of these different apartments. The walls and pillars are ornamented with flowers in various patterns, painted in distemper, or in oil, on a white ground, composed of a sort of whitewash, mixed with shining particles, which is called *seem gil*, or silver earth. The doors are of carved wood, and, in winter, are covered with curtains of velvet, embroidered cloth, and brocade. In all the rooms, at a height which is easily within reach, are arched recesses in the walls, which are painted very richly, and, by a strange depravity of taste, are thought to be embellished by glass bottles of various coloured pickles and preserves. The poor also have these recesses, which they ornament with China cups, and in which they store their fruits for winter consumption: the curtains in their houses are of quilted chintz, or of canvas, painted with birds, beasts, flowers, &c., in oil. The pictures in the houses of the rich are mostly, if not entirely, done in Persia: the figures are old Persian kings and warriors, young men and women drinking together, or scenes from some of the Persian poems. The principal ornaments of the rooms of the great, are carpets and felts, which serve them in place of all other furniture. Persian carpets are too well known in England to require any description, but there is a kind made in Heraut which excels all others I ever saw; they are made of wool, but so fine and glossy, and dyed with such brilliant colours, that they appear to be of silk; carpets of highly wrought shawl are also used; but this piece of magnificence must be very rarely used from the enormous expense*.

"There are felts for sitting on, spread close to the wall all round the room, except where the entrance is, which, in the halls, is always at one end. They are brownish-grey, with patterns of flowers in dim colours; that at the top of the room is broader than the others, which are about three feet and a half or four feet broad. On the upper felt are smaller carpets of embroidered silk or velvet, with cushions of velvet for distinguished visitors."

The peninsula of India, like most countries which have had many conquerors, presents a great diversity of dwellings, not only in splendour and costliness, but also in style. As, however, the Hindoos are the people who are most peculiarly connected with that country, we will give a brief sketch of the dwellings of Hindoos of rank. Benares presents the most marked appearance of Hindoo origin: in this city the amiable Bishop Heber visited a house which he has described. It belonged to two minors, the sons of an opulent citizen. It was a building of striking appearance, and had a large vacant area before the door. The house was very irregular, and built round a small court, two sides of which were taken up by the dwelling-house, and the others by the offices. It was four lofty stories in height, with a tower over the gate, of one story more. The front had small windows of various forms, some of them projecting on brackets, and beautifully carved, and a great part of the wall itself was covered with carved patterns of sprigs, leaves, and flowers, like an old-fashioned paper. The whole was of stone, but painted a deep red. The general effect of the house was very much like that of some of the palaces at Venice, as represented in Canaletti's views. There was an entrance-gateway, with a groined arch of rich carving, and on each side was a deep, richly-carved recess, like a shrine, in which were idols, with lamps before them,—the household gods of the family. The inner court was covered with plantains

* The price demanded for a shawl-carpet of very large size was 10 000*l*, and this was said to be far below its value.

and rose-trees, with a raised and ornamented well in its centre: on the left hand a narrow and steep flight of stone steps led to the first floor. On this floor were several rooms, not very large, but beautifully carved, the principal one, which occupied the first floor of the gateway, having an arcade round it. The centre, about fifteen feet square, was raised and covered with a carpet. The arcade round was flagged with stones, and was so contrived that on a very short notice four streams of water, one in the centre of each side, descended from the roof like a permanent shower-bath, and fell into stone basins, sunk beneath the floor, and covered with a sort of open fretwork, also of stone. "These rooms," says Bishop Heber, "were hung with a good many English prints, of the common paltry description which was fashionable twenty years ago, such as Sterne and poor Maria, (the boys supposed this to be a doctor feeling a lady's pulse,) the Sorrows of Werter, &c., together with a daub of the present Emperor of Delhi, and several portraits in oil of a much better kind, of the father of these boys, some of his powerful native friends and employers, and of a very beautiful woman, of European complexion, but in an Eastern dress, of whom the boys knew nothing, or would say nothing more, than that the picture was painted for their father by Hall-jee of Patna. I did not indeed repeat the question, because I knew the reluctance with which all Eastern nations speak of their women, but it certainly had the appearance of a portrait, and, as well as the old Baboo's picture, would have been called a creditable painting in most gentlemen's houses in England."

The houses of the Mohammedan inhabitants of India do not differ in any marked degree from those of Persia or Turkey: the morals, the religion, and the general social arrangements, being nearly the same. In the southern provinces of India, such as Mysore, &c., the houses are of very large dimensions, inclosing numerous courts, surrounded by buildings. There is also a very remarkable class of erections to be seen in the hilly districts towards the western shore of the peninsula: these are called *hill-forts*. On the very summit of a hill are often built, not only the fortification necessary for the defence of a place, but numerous residences both for the governors and the governed. There are but few fortified places in the world more formidable, in a military point of view, than these forts; because not only are the walls and general defensive arrangements of a very complete kind, but the hill on which they are situated is often so precipitous, that it is with the utmost difficulty the ascent to them is accomplished.

The countries to the south-east of India, such as the Birman Empire, Siam, Malaya, &c., do not display such specimens of elegant buildings as are to be found in India, and therefore need not occupy much of our attention. The nature of the houses, in and near the Birman Empire, may be judged of from the following remarks of Symes, in his *Embassy to Ava*:—"The streets of Pegu are spacious, as are those of all the Birman towns that I have seen. The new town is well paved with brick, which the ruins of the old plentifully supply; and on each side of the way there is a drain to carry off the water. The houses of the meanest peasants of Pegu, and throughout the Birman empire, possess manifest advantages over Indian dwellings, by being raised from the ground either on wooden posts or bamboos, according to the size of the building. The habitations of the higher ranks are usually elevated six or eight feet, and those of the humbler classes, three or four. There are no brick buildings either in Pegu or Rangoon, except such as belong to the king, or are dedicated to the divinity Gaudma; his majesty having prohibited the use of brick or stone in private buildings. The houses, therefore, are all made of matting, or of sheathing-boards, supported on bamboos or posts; but from their being composed of such combustible materials the inhabitants are under continual dread of fire, against which they take every precaution. The roofs are lightly covered, and at each door stands a long bamboo, with an iron hook at the end, to pull down the thatch. There is also another pole, with a grating of iron at the extremity, about three feet square, to suppress flame by pressure. Almost every house has earthen pots, filled with water, on the roof; and a particular class of people, whose business it is to extinguish fires, perambulate the streets during the night."

The eastern part of Asia is occupied by that remarkable people, the Chinese, a people who seem to pride themselves in being different in manners, in dress, in language, in manufactures, from every other; who think that their country is the centre of civilization, and that the Europeans are a sort of barbarous race inhabiting some remote corner of the earth. The houses of the wealthy in China bear a considerable resemblance to those which have been brought to light at Pompeii. They consist, generally speaking, of a ground floor, containing several apartments, which are lighted by windows looking into a central court. The principal apartment is near the entrance, and is devoted to the reception of visitors, &c. The inner apartments are separated from each other by doorways covered with silk hangings. The houses are frequently entered by a triple gateway, consisting of a large folding door in the middle, and a smaller one on each side; the large entrance is for distinguished visitors, and the smaller for those of humbler rank. It is not unusual to see cylindrical lanterns hung at the sides of the gate, on which the name and title of the inhabitant are written, so as to be read by night as well as by day. In the best houses, there are seldom any stairs, except a few at the entrance. The foundations of the houses are of extremely solid stone-work, not unfrequently of granite. The walls are of blue brick, and frequently have an artificial surface laid on them. Stucco-work of considerable delicacy, representing animals, flowers, fruit, &c., is frequently seen, and is executed at a low price. Inner partition walls are often divided into compartments which are filled with a kind of fret-work of porcelain. The roof is covered with tiles, whose tranverse section approaches to a semicircle: they are ranged along with their concave side uppermost, to serve as channels for the rain: other tiles are then laid with their concave side downwards, so as to hide the joinings of the tiles:—it is supposed that this plan was derived from the use of split bamboos, as is customary among the Malays.

Sir G. Staunton describes the house of a mandarin eye which may be taken as a representative of the more costly dwellings. The whole inclosure of the dwelling was in the form of a parallelogram, and surrounded by a high brick wall, the outside of which exhibited a plain blank surface, except near one of its angles, where the gateway opened into a narrow street, little promising the handsome structure withinside. The wall in its whole length supported the upper ridge of roof, whose lower edges resting upon an interior wall parallel to the other, formed a long range of buildings divided into apartments for servants and offices. The rest of the inclosure was subdivided into several quadrangular courts of different sizes. In each quadrangle were buildings upon platforms of granite, and surrounded by a colonnade. The columns were of wood, nearly sixteen feet in height, and as many inches in diameter at the lower end, decreasing to the upper extremity about one-sixth. They had neither capital nor base, according to the strict meaning of these terms in Grecian architecture, nor any divisions of that part called the entablature, it being plain up to the cornice: at the lower end they were let into hollows cut into stones for their reception, and which formed a circular ring round each somewhat in the Tuscan manner. Between the columns, for about one-fourth the length of the shaft from the cornice downwards, was carved and ornamented wood-work, which might be termed the entablature, and was of a different colour from the columns, which were universally red. This colonnade served to support that part of the roof which projected beyond the wall-plate in a curve, turning up at the angles. By means of these roofed colonnades, every part of these extensive buildings might be visited under cover. The number of pillars throughout the whole was not fewer than six hundred.

Annexed to the principal apartment was an elevated building, intended for the purposes of a private theatre and concert room, with retiring apartments behind, and a gallery for spectators round it. None of the buildings were above one story high, except that which composed the ladies' apartment during the residence of the owner: it was situated in the inmost quadrangle. The front consisted of one long and lofty hall, with windows of Chinese paper, through which no objects could be distinguished on the other side. At the back of this hall was a gallery, at a height of about ten feet, which led to several small rooms, lighted only from the hall. These inner windows were of silk gauze, stretched on frames of wood, and worked by the needle with representations of flowers, fruit, birds, and insects; others were painted in water-colours. This apartment was fitted up in a neater style, though upon a smaller scale, than most of the others. The whole of this part of the building was calculated for private apartments. In one of the outer quadrangles was a basin or pond of water, in the midst of which was built a stone room, exactly in the shape of one of the

covered barges of the country. In others of the quadrangles were planted trees, and in the largest, a heap of rocks was rudely piled; and at one end was a spot laid out for a garden in miniature, but not yet finished.

5. Houses of America.

Under the general name of America are included as great a diversity of countries as were, perhaps, ever classed together. There is Canada, with its British institutions mingled with those of the French inhabitants of the Lower Province;—the United States, with its northern states almost English, and its southern almost Spanish;—Mexico, with its Spanish character engrafted upon the ancient Aztecs;—and the numerous states of South America, all of which once belonged to Spain and Portugal, but all of which are now republics, or something approaching thereto:—lastly, there are the native Indian tribes, from the fur-hunters of the frozen regions in the north, to Patagonia in the south. It may well be supposed that the dwellings, as well as the character of the inhabitants vary exceedingly in different parts of this wide tract. Still, we may class all under three heads,—Indian extraction, English extraction, and Spanish or Portuguese extraction. The dwellings of the Indians we need not consider here, for they universally come under the denomination of "rude" habitations. Those of Canada, and the northern portions of the United States, we may omit for a different reason, viz., the better classes of habitations very closely resemble those of England. We shall therefore merely offer a few remarks on those parts which have once been either Spanish or Portuguese colonies.

Humboldt considers the modern city of Mexico to be one of the finest cities ever built by Europeans. There are but few cities that can be compared to it, for the uniform level of the ground on which it is built, the regularity and breadth of the streets, and the extent of the public *places* or squares. The architecture is generally of a very pure style; and there are edifices of a very beautiful construction. The exterior of the houses is not loaded with ornament. Two sorts of hewn stone (the porous amygdaloid called *tetzontli*, and especially a porphyry of vitreous feldspar without quartz,) give to the Mexican buildings an air of solidity, and sometimes of magnificence. There are none of those wooden balconies and galleries to be seen which disfigure so much all the European cities in both the Indies. The balustrades and gates are all of Biscay iron, ornamented with bronze; and the houses, instead of roofs, have terraces like those in Italy, and other southern countries. Many of the streets are nearly two miles in length, perfectly level and straight, and with the ends terminating in a view of the mountains that surround the valley in which the city is situated. The houses are, in general, of a uniform height, most of them having three stories, each from fifteen to twenty feet high. The fronts of most of the houses are painted in distemper, white, crimson, brown, or light green; and owing to the dryness of the atmosphere, they retain their beauty unimpaired for many years. Some inscriptions are painted upon them taken from Scripture, or stanzas addressed to the Virgin. Many of the houses are entirely covered with glazed porcelain in a variety of elegant designs, by which a rich mosaic-like appearance is produced. The walls of the great staircases are frequently covered in the same manner, and mixed with a profusion of gilding, which in contrast with the blue and white porcelain has a splendid effect.

There are no other cities or towns of Mexico at all meriting notice in respect of their dwellings, as the farther we recede from the capital the more does a commingling of European and Indian manners become perceptible.

At the southward of Mexico, and occupying the northern portion of South America, are numerous states which were once Spanish but are now republican; but anarchy so reigns there, that we know but little of the actual condition of the towns and houses.

The residences of the inhabitants of Chili may be judged of from those of its capital, *Santiago*. This city is divided into rectangular and equal squares, separated by streets forty feet broad. Each compartment or square measures about four hundred feet each way; and each square is called a *quadro*. The streets are ill-paved with small round stones brought from the bed of the river, and have a gutter through the middle; but the best streets are paved on one side with slabs of porphyry, quarried from a neighbouring hill. The great central square, or *plaza*, contains the house of the director, the palace of justice, the prison, and other public offices, together with the cathedral, the bishop's palace, and private residences. All these buildings are built of brick, plastered, and whitewashed, and present no specimens of architectural elegance. The general nature of the private dwellings in the city, even those inhabited by the wealthy classes, may be estimated from the fact, that the usual materials are ill-shaped sun-dried bricks, and mud instead of mortar. The cathedral is the only stone building in the city.

Valparaiso, the principal port of Chili, consists of little more than one street: the houses are huddled together without order;—the church is built chiefly of mud. There is a suburb called Almendral, the houses of which are small and incommodious, of one ground-floor only, built of sun-dried bricks, plastered with mud and whitewashed. Some have rude corridors projecting over the foot-way; others have raised brick paths in front of their houses; but generally the foot-path is merely a raised heap of earth. Some of the houses are roofed with tiles, while others are thatched with rushes, grass or palm-leaves; some have passages leading from the street; but in most cases, the door opens directly from the street to the apartments; and as many of them have no light but what they receive from the door, this door is generally left open. Some of the rooms have small windows with panelled shutters, having clumsy wooden bars in front, rudely carved: some few are painted red; but generally they are not painted at all.

It will thus be seen that Chili does not present much to call forth admiration in the construction or appearance of its houses. Indeed along the whole western coast of South America, but little attention seems to be paid to the construction of private dwellings; for earthquakes are so frequent that anything lofty would almost inevitably be made a heap of ruins. Ulloa's description of the houses of Lima, the capital of Peru, though requiring alterations in some parts to suit it to the state of things at the present day, may be taken as a tolerably near approach to the truth. He says:—"The houses, though for the most part low, are commodious, and make a good appearance. They are all of baxareque and quincha. They appear indeed to be composed of more solid materials, both with regard to the thickness of the principal walls, and the imitation of cornices on them." The principal parts are of wood, morticed into the rafters of the roof. The walls are lined within and without with wild canes and osiers, so that the timber-work is wholly inclosed. The osiers are plastered over with clay, and whitewashed. Cornices and porticos of rough workmanship are then added, and whitewashed to imitate stone. The roofs are flat, and covered only so far as is necessary to keep out wind and sun. Such is the general character of the houses in Lima. Those which are inhabited by Europeans are in many cases built somewhat in the style prevalent in their own country; but always with attention to the necessary character of being low, seldom exceeding two stories in height, and very often not exceeding one. Mr. Miers, a recent traveller in South America, describes the houses at Mendoza, an important town in the La Plata provinces, as being nearly such as we have here described:—all of one story: built of adobes, (sun-dried bricks,) plastered with mud, and whitewashed. Even the governor's house was of this character.

On crossing to the eastern shore of South America, the city of Buenos Ayres does not seem to present many more attractions than those we have described,—considered with reference to the houses. Mr. Miers says, "The houses fronting the beach I mistook for gaols, as they had no glass sashes, and the open windows were defended by iron gratings; but on entering the town, I found all the houses constructed in the same manner, mostly of one ground floor: their deserted appearance, and shabby exterior, bore more the semblance of gaols than the habitations of an industrious, civilized, and free people." Mr. Miers and his companions were lodged and entertained at the house of one of the most respectable inhabitants; and the mode of taking meals, &c., may serve to convey some idea of the manners of the inhabitants. Mr. M. was placed at the top of the family table,—the usual seat of guests, according to the custom of the country. Three black female slaves waited at table. About twenty dishes, of different sorts, were brought, each one after the other was removed,—containing bread and vermicelli soup, different kinds of stews, boiled beef, roast veal, lettuce salad, and various sorts of vegetables. The wish was, that the guests should eat some of every dish,—no easy matter among such a number. After dinner, one of the slaves said a long unintelligible grace, upon the conclusion of which all the family crossed themselves

upon their foreheads, mouths, and breasts: the cloth was not removed, but was kept for the dessert, which consisted of a profusion of ripe figs, peaches, nectarines, apples, pears, and oranges. Nothing but water was drunk at or after dinner. A basin and towel were brought, in which all the company washed their hands in the same water.

Rio Janeiro, the capital of Brazil, is not provided with houses of a kind proportionate to the extent and importance of the city. The streets, which are straight and narrow, are paved with granite, but are scarcely provided with any light at night. The houses, which are generally of two stories, and low and narrow in proportion to their depth, are, for the most part, built of blocks of granite: the upper story however, is often of wood. The thresholds, door-posts, lintels, and window-frames, are of massy quartz or feldspar, brought from Bahia in a state ready for use. The roofs are universally covered with semi-cylindrical tiles. The lower story is commonly occupied by a shop or warehouse; the second (and third, if there be one) by the family apartments, to which there are long and narrow passages taken from the ground floor, and communicating with the street. The houses used formerly to have an appendage called a *jealousy*, or *jalousie*, which were gloomy projections from the upper windows. These jalousies were raised on a platform of stone, two and half feet broad, and extended to the top of the window. They were formed of lattice-work of a fanciful pattern, divided into panels or compartments, some of which were fitted up with hinges at the top, so as to form a sort of flap, which, when opened a little way, allowed persons in the balcony to look down into the street without being seen themselves. They gave to the fronts of the houses a dull, heavy, and suspicious appearance, and have been superseded by light open balconies.

Until the recent changes in the political circumstances of Brazil, the houses of Rio Janeiro, as well as the general manufactures produced, felt the ill-effects of a lazy spirit that used to distinguish the white inhabitants: they were not clever artisans,—they were too lazy to attain skill,—and they were too proud to carry even their own working tools through the streets. Mr. Luccock has given an amusing account of the combined effect of these three blots:—"It was necessary to open a lock, of which I had lost the key; and the skill necessary to pick it was so rare, that the master and waiter of the hotel where I then lodged, were greatly perplexed with my inquiries, at what place it was to be found. At length they advised me to apply to an English carpenter who had been settled in Rio about two years, and employed several men, one of whom he requested to go with me, for then masters did not venture to command; assuring me that the man would execute what I wanted. He detained me a long time, but, to compensate for the delay, made his appearance, at last, in full dress, with a cocked hat, shoe and knee-buckles, and other corresponding paraphernalia. At the door of the house he still loitered, wishing to hire some black man to carry his hammer, chisel, and another small instrument. I suggested that they were light, and proposed to carry a part or the whole of them myself; but this would have been as great a practical solecism as using his own hands. The gentleman waited patiently until a negro appeared; then made his bargain, and proceeded in due state, followed by his temporary servant. The task was soon finished, by breaking the lock, instead of picking it, when the man of importance, making me a profound bow, stalked off with his follower." Since the period of Mr. Luccock's visit, however, many changes and improvements have occurred.

There is a little spot at the southern extremity of Africa, we mean the Cape of Good Hope, to which we will make a brief allusion, before we bring to a conclusion our allotted task. "The streets of Cape Town," says Mr. Burchell, "though not paved, are kept always in excellent order, and derive an agreeable freshness from trees of oak and pinaster, planted here and there on either side." The houses are built of brick, and faced with a stucco of lime. They are decorated in front with cornices and many architectural ornaments, and frequently with figures both in high and low relief. In front of each house is a paved platform (called the *stoep*, or step) usually eight or ten feet wide, and commonly from two to four feet above the level of the street. It is ascended by steps, and has, generally, a seat at each end; and here the inhabitants frequently walk or sit to enjoy the air, or to converse with passing friends. The roofs are flat having no greater inclination than is just sufficient to throw off the rain water; and they form a very commodious terrace. On account of the mildness of the Cape winters, fire-places are nowhere seen excepting in the kitchens. Within, the houses, to an eye accustomed to the elegant decorations and furniture of an English apartment, have the appearance of a want of comfort, and, not having a plastered ceiling, the bare joists and floor above give them the look of an unfinished building. But the loftiness and size of the rooms render them respectable, and contribute greatly to their coolness in summer. This description, however, was more applicable some years ago than it is at present, for the English residents are sure to introduce English habits and customs more or less into the country.

AN INDIAN HAREM.

TO OUR READERS.

The close of this, the Nineteenth Volume of the *Saturday Magazine*, affords a favourable opportunity for considering the state of the popular literature of this country at the period when our arduous task commenced*—of taking a retrospect of our labours in fulfilment of the duties then undertaken by us—of stating the mode in which we propose to continue our services—and of making a general acknowledgment of the valuable advice and assistance with which we have been favoured by a numerous body of friendly correspondents.

It must be in the recollection of our readers, that at the time when we commenced our undertaking the humbler classes of the community were largely supplied with cheap pamphlets, of the most dangerous and deplorable tendency;—writings in which the most holy things were lightly treated of,—the most endearing of human ties derided,—and our revered institutions held up to open scorn and contempt. Works of this character could be superseded only by creating a taste for something better, and we have reason to believe that the *Saturday Magazine* has, under the Divine blessing, had a large share in creating and supplying that wholesome taste which is now so general.

We cannot but feel gratitude and satisfaction at the success which has attended our efforts, at the same time that we experience the pleasing consciousness of having remitted no endeavours on our part to deserve and fully to justify the public approbation. We may, at least, claim the negative merit of having most carefully excluded from our pages every expression and sentiment which can be considered as indicative of party feelings and objectionable principles, or which might be likely to offend good taste and delicacy of feeling.

Bearing in mind the responsibility attaching to the management of a work which finds its way into the hands of so many thousands, and the power which it gives of inculcating the most salutary as well as the most fatal opinions, we have uniformly endeavoured to infuse a Christian character and tendency into every branch of popular knowledge. We have not arrogated to ourselves the office of instructors on sacred topics, by interfering with the labours of those whose especial department it is to set forth and to defend the principles of our established faith, nor have we permitted our pages to become the vehicle for controversy and discussion;—but we have nevertheless been anxious to give such a general bearing to our various articles as to subserve the purposes of religion, and to show, wherever the subject has naturally led us to do so, the blessings and advantages we derive from the position, in which, as members of a Christian community and of a Scriptural church, we are privileged to stand.

It is sufficiently evident that the object of a popular periodical, such as the *Saturday Magazine*, is to administer to the instruction and amusement, not of one class of readers in particular, but of all: so that into whatever hands the work may fall, there may be found among its various subjects something to suit the tastes and inclinations of every reader. The man of literature, in glancing over the contents of such a work, will meet with some notice of eminent men or of their writings, and be able to refresh his memory or even to add to his knowledge from this humble source. The scientific man

* "The dangers to which the Faith is exposed are not confined to the open assaults of the infidel and the blasphemer. It cannot be doubted, that great and extensive mischief may arise to religion, and to the eternal welfare of mankind, should our general literature, and the various institutions of society, acquire a character and tendency decidedly contrary to the principles and practice of Christianity. That such has been, for some time past, the general and growing tendency of much of our popular literature, will hardly be denied; but the extent of the evil is known only to those who have made it the subject of particular investigation. It has pervaded more or less every branch of it, and in some departments has evidently been the result of deliberate and systematic operations. This has been the case more especially with *cheap* periodical literature, and with works of education. Books intended for the instruction of the rising generation have, in some cases, been made instruments for teaching the doctrines of Materialism under the disguise of scientific principles. In others, where religious instruction was indispensable, it has been of the most inefficient and exceptionable kind. But the prevailing and most successful method has been to separate knowledge from religion, and to keep religion altogether out of sight. This has been the principle upon which too many works of instruction have lately been conducted. And thus they have become mischievous in a greater degree in proportion to the popularity which they have acquired.

"The same course has been pursued with regard to cheap periodicals, which have lately become so considerable a branch of literature. The disreputable part of them have been made vehicles for the diffusion of infidel opinions, which have been conveyed in every shape that was likely to render them agreeable to the class of persons to whom they were addressed. Everything has been done in order to enlist the passions on their side; they have been mingled with entertaining literature of every kind, that the poison might be rendered more palatable to general readers. And, until lately, except in a few instances, the whole force of this new power was directed against the principles and institutions of religion. Nor has the magnitude and extent of this power been as yet completely developed, or its effects fully known. It has, however, been ascertained that the circulation of such papers in and from London alone amounted, in May last, to the number of 300,000 weekly: and of these not one was professedly engaged in the defence or support of religion and its institutions. The greater part of them were openly and avowedly hostile to everything which is sacred and dear to our religious feelings, and the remainder wholly dedicated to other objects."—*Report of the Society for Promoting Christian Knowledge, for the year* 1832.

may also expect to find an abstract, however brief, of the inventions and discoveries, which render the present age remarkable above all that have preceded it. The lover of Nature will not be disappointed of information respecting his favourite study, but will find the animals, the plants, the minerals in which he is interested, brought under his notice from time to time, either in the lighter sketches of natural scenery, or the more scientific arrangements of accurate description. The agriculturist, the manufacturer, the mechanic, and even the intelligent operative, will also find easy details respecting the various branches of industry in which they are engaged, and the productions with which the civilized world is enriched by means of their various pursuits.

With this general view of the objects of a cheap periodical work, we have supplied to the readers of the *Saturday Magazine* information on a large variety of topics, suitable to the capacities of a corresponding variety of readers. Eager curiosity and desire for knowledge, though in themselves good, inasmuch as they mark a vigorous intellect, and may be productive of highly-beneficial results, are yet so often found to operate without subordination to any higher principle, that we cannot be too cautious in selecting food wherewith to appease them. We may injudiciously stimulate the appetite till it can only be satisfied with false and unnatural excitements, or we may with equal ill effect endeavour to allay its cravings with harsh and ungrateful aliment, from which it will turn with disgust. There are subjects which seem at first sight to have little bearing on happiness or virtue, and which will therefore be necessarily excluded from publications of a professedly religious character, yet inasmuch as these subjects are capable of meeting the desire for knowledge in a way that, to say the least, cannot be prejudicial to the moral interest of the reader, and as they may at the same time have a certain effect in refining the taste, enlarging the field of knowledge, or suggesting innocent employment of time, it appears highly injudicious to reject them in a work whose object it is to combine amusement with instruction.

We may here allude to the mode of illustrating the *Saturday Magazine*. Wherever a piece of mechanism, a manufacturing process, a description of a building or country, seemed to require the aid of the pencil to elucidate and illustrate the letter-press description, such illustrations have been given, of sufficient distinctness for the purpose in view, but without any pretension to high artistic excellence. Every one accustomed to the usages of commercial life must be aware that to ensure continuance to a periodical publication, and to fulfil the intentions for which it was established, a remunerating profit must be obtained; without this, the honour may be great, but must be short lived. The cost incidental to the production of highly-finished illustrations is in general incompatible with the permanent success of a work sold at so low a price as ours. The engravings in our Magazine are therefore intended for illustration rather than for decoration. We are contented to take our stand on the general merits of the work, the literature of which has gradually elevated it to a higher place than it was originally intended to occupy among the periodical publications of the day, and gained it an introduction to every class of society.

In looking back on our past course, we are conscious of having presented to our numerous readers a safe and useful miscellany, calculated to lead them onward from simpler to more abstruse knowledge, and to give a wholesome direction to their tastes and feelings. The testimony of correspondents has given us frequent and pleasing confirmation of this belief; and we may here remark, that the information we have received from this source has always been most acceptable; the suggestions conveyed have met with serious attention, and have not been adopted or declined on insufficient grounds. From our limited space, as well as from a desire to avoid controversy and personal feeling or party views, we are not able specially to notice the different communications we are favoured with, yet they are ever regarded as welcome indications of the wishes and opinions of our readers, and, as such, we are glad to have the present opportunity of acknowledging their value.

During the coming year we hope to enter on several new and interesting subjects of inquiry, and where we may hitherto have appeared to slight the communications of any of our readers, it will be seen that they have only been deferred with a view to entering the more fully into them on a future occasion. The treasures of knowledge are inexhaustible; and the chief difficulty consists in making a judicious selection for the benefit of a variety of readers. In this task we shall continue to avail ourselves of the assistance of competent and experienced writers whose time and attention are devoted almost exclusively to the work.

END OF THE VOLUME.

THE

SATURDAY MAGAZINE.

VOLUME THE TWENTIETH.

JANUARY TO JUNE.

M.DCCC.XLII.

LONDON:
JOHN WILLIAM PARKER, WEST STRAND.

M.DCCC.XLII.

INDEX

TO THE

NAMES AND SUBJECTS IN THE TWENTIETH VOLUME.

Abbey, Furness, history of, 161
——— Melrose, on revisiting, 29
Ablactation, 228
Affections of man before the Fall, 248
Affliction, 120
America, intolerance in, 75
——— mental thraldom in, 72
American Indian, anecdote of an, 98
——— character of the, 59
——— ingenuity of an, 160
Anamorphoses, 11
Anecdote, singular, 139
——— of Serjeant Glanvil, 189
Anecdotes of avarice, 198
Animals, perfection of, 208
——— situation of the ear in, 157
——— and plants, has the Moon any influence upon, 101
Ants, battles of, 243
April, rural economy for, 159
Apsley House, description of, 135
Arago, anecdote by, 68
Artesian wells, 236
Arts, Fine, brief History of the, No. IV. 121—V., 209
Avarice, anecdotes of, 198

Bacon, extracts from, 181
Baptism, lines on, 141
Barrow, extracts from, 131, 152, 190
Battles of red and black ants, 243
Beneficial effects of labour, 54
——— influence of religion, 152
Benevolence and sensibility, 192
Bennett, extracts from, 134, 189, 195
Bennas of Malacca, 134
Berkeley, extracts from, 157, 182
Birds, position of, at roost, 227
Blair, Dr., remark by, 27
Body and mind, exercise of, 180
Borrad, remarks on the gipsies, by, 243
Bosom-sin, 192
Boyle, observation by, 147
Brandy Pest, I., 13—II., 27—III., 68—IV., 98—V., 119—VI., 142—VII., 167
Bremen, description of, 33
Bridge, floating, over the Hamoaze, 60
Bryant, poem by, 190
Burial place of the convent of Mount Sinai, 141
Burton, extracts from, 135, 180

Carrier pigeon, the, 205
Caucha plant, the, 59
Ceremonies, funeral, of the ancient kings of Mexico, 195
Chantrey and his Works, I., 18—II., 66—III., 106
Cherokee Indian, ingenuity of an, 160
Chess, Easy Lessons in, I., 92—II., 133—III., 164—IV., 203—V., 247
Christian profession, excellence of the, 152
Christianity, genuine, 99
Cochineal insect, the, 219, 240
Coffee plantations, 205
Coggeshall Abbey, 97
Coldness in religion, 181
Commentaries and epitomes, 23
Commercial History of Currants and Raisins, I., 103—II., 131
——— telegraphs and the penny postage, 8
Comparison, a—gold and iron, 207
Conscience, 96
Contagion in an Indian village, 184
Content of mind, 131
Convent of Mount Sinai, burial place of the, 141
Conversation, 200
Coral islets, 189
——— reefs, 134
Cotton manufacture, the, 153
Council of Constance, Wicklifle's body burnt by order of, 144
Cowper, extract from, 139
Currants and Raisins, commercial history of, I., 103—II., 131

Dantzig, description of, 113
Danube, Voyage down the, I., 185
Davey, extracts from, 75, 152
Death, 91
Deceit, 163
De Tocqueville, remark by, 72
Deficiency, mental, ignorance of, 240, 243
Differences among men, their cause, 227
Discipline, overstrained, 195
Dogs, anecdotes of, 144, 224, 240
Doing one's duty, 134
Double and multiple stars, 239
Drew, extract from, 70
Dudley, Lord, extract from his letters, 112
Dury, extract from, 103
Duty, doing one's, 134

Ear, situation of the, in animals, 157
Early rising, 197
Easy Lessons in Chess, I., 91—II., 133—III., 164—IV., 203—V., 247
Economy of nature, 27
——— Rural, for the Months, 39, 79, 117, 159, 183, 223
Education, true religion inseparable from, 144
Effects, beneficial, of labour, 54
Elba, island of, 233
Electricity, voltaic, 228
Elephant's pulse, an, 103
Elizabeth, Princess, letter of, 235
Ellis, extract from, 190
English household management, 190
Enjoyment of natural beauties, 150
Epitomes and commentaries, 23
Examination, self, 115
Excellence of the Christian profession, 152
Exercise of mind and body, 190
Expectation, 31
External Senses, Philosophy of the, I., 81—II., 169—III., 249
Eyes and understandings, learned, 70

Fashions, idle, 139
Feather, mechanism of a, 221
February, rural economy for, 79
Felicity and industry, 134
Fine Arts, brief History of the, IV., 121—V., 209
Flax, nature and cultivation of, 31
Floating bridge over the Hamoaze, 60
Forbearance, 181
Forbes, anecdote by, 103
Foster, extract from, 163
Fountains, 192, 235
Fraxinella, remarkable property of the, 246
Fuller, extract from, 38
Funeral ceremonies of the ancient kings of Mexico, 195
Fur and the Fur Trade, I., 41
Furness Abbey, Lancashire, 161
Future, ignorance of the, 27
——— views for the, 232

Genuine Christianity, 99
Germany, Hanse Towns of, 33, 73, 113
Gipsies, the, 243
Glanvil, Serjeant, anecdote of, 189
God, love of, 147
—— omnipotent, 5
Godly home, unspeakable blessedness of a, 181
Gold and iron, a comparison, 207
Good-meaner and the hypocrite, 120
Grafting, I., 115—II., 148
Gratitude and ingratitude, 119
Great, commerce with the, 232
——— influence of the, 190
——— Turk's dogs, 240
Greenhouses, indoor, 100
Gunpowder, 150

Hair harvest in France, 158
Hale, Sir Matthew, Memoir of, I., 29—II., 75
—— extracts from, 181
Hall, Bishop, remark by, 248
—— Capt. Basil, observation by, 70
Hamilton, remark by, 205
Hamoaze, floating bridge over the, 60
Hanse Towns of Germany, 33, 73, 113
Hemans, Mrs., extract from, 103
Hemp, nature and cultivation of, 15
Herm and Jethou, 248
Historical notice of Rugby School, I., 129—II., 145
Home, unspeakable blessedness of a godly, 181
Horne, Bishop, extracts from, 91, 238
House, a religious, 230
Household management in England, 190
Hudson, scene on the banks of the, 190
Hullah's adaptation of Wilhem's Method of Teaching Singing, I., 23—II., 35—III., 62
Hurdis, extract from, 197
Hypochondriacism, 189
Hypocrite and the good-meaner, 120

Icelandic Sketches, I., 9—II., 25—III., 57
Idle fashions, 139
Ignorance of the future, 27
——— of mental deficiency, 240
Imitation, 243
Improved Method of Soldering Metals, I., 35—II., 93
Indecision, 227
Indian, American, anecdote of an, 98
——— character of the, 59
——— ingenuity of an, 160
——— village, contagion in an, 184
Indoor greenhouses, 100
Industry and felicity, 134
Infant, lines on the baptism of an, 141
Influence of religion, 152
——— of the great, 190
——— of the moon upon plants and animals, 101
——— on the weather, 21
Insect, the cochineal, 219, 240
Insignificance of man, an infidel topic, 230
Intelligence and virtue the only basis of human happiness, 103
Irish Manners and Customs Sketches of, I., 5—II., 20—III., 55—IV., 95—V., 108—VI., 151—VII., 177
Iron and gold, a comparison, 207
Island of Elba, 233
Isthmus of Panama, proposed route across, 231

January, rural economy for the month of, 39
Javanese Sketches, I., 201—II., 225—III., 237—IV., 241
Jethou, isle of, 248
Jocelyn, Lord, account of the Bennas of Malacca, by, 134
Jortin, extract from, 115
June, rural economy for, 223

King, Dr., anecdotes by, 139, 198
Kings of Mexico, funeral ceremonies of the, 195
Kissing in Russia, 3
Knox, Alexander, remark by, 181
Koch, extract from, 150
Kolff, extract from, 72

Labour, beneficial effects of, 54
Ladder to Thrifte, 195
Lamb, definition by, 227
Latimer, Bishop, observation of, 227
Learned eyes and understandings, 70
Legan, on the cotton manufacture, 158
Lessons, easy, in Chess, 91, 133, 164, 203, 247
Letter of the Princess Elizabeth, 235
Lines by Lord Melcombe, 94
——— on the baptism of an infant, 141
——— inscribed in a lady's pocket-book, 228
Lost mind, the, 103
Love of God, 147
Lubeck, description of, 73

Mallet, extract from, 120
Man formed for society, 228
—— insignificance of, an infidel topic, 230
Management, English household, 190
Mangle, the common, 140
Manners and Customs, Irish, 5, 20, 55, 95, 108, 151, 179
Manufacture, the cotton, 158
——— of tobacco-pipes, 111
March, rural economy for, 117
Mathematics, 181
Maurice, extract from, 144
May, rural economy for, 183
Measurers, road, 181
Mechanism of a feather, 221
Meditated Resolves, I., 35—II., 64—III., 104—IV., 135—V., 187—VI., 222
Meditation on the Scriptures, 230
Melcomb, Lord, lines by, 94
Melrose Abbey, lines on revisiting, 29
Memoir of Sir T. S. Raffles, I., 188—II., 93
Men, differences among, 227
Mental thraldom in America, 72
——— deficiency, ignorance of, 240
Metals, improved method of soldering, I., 35—II., 93
——— working in, 59
Mexico, Kings of, 195
Mind, content of, 131
——— the lost, 93
——— and body, exercise of, 190
Misuse of the term "Nature," 190
Monica, St., 38
Montaigne, extracts from, 150, 155, 181
Months, rural economy for the, 39, 97, 117, 159, 183, 223
Moon, motion of the, 198
——— question of its influence on the weather, 21—on plants and animals, 101
More, Hannah, extract from, 182
Mosaic Work, I., 6—II., 71
——— origin of the term, as applied to works of art, 119
Motion of the planet Saturn, 227
Mount Sinai, burial-place of the convent of, 141
Multiple stars, 239

Natural beauties, enjoyment of, 150
Nature, economy of, 27
——— misuse of the term, 190
Neilgherry Hills and their Inhabitants, I., 137—II., 153
Nights, Summer, in Norway, 239
Nobility, the Austrian, 112
Noche Serena, 70
North American Indians, the, 59
——— anecdote of an, 98
Norway, Summer nights in, 239

Omnipresence of God, 5
Oranges, 205
Overstrained discipline, 195

Pacific, proposed route to the, 231
——— sea-piece in the, 195
Paley, extract from, 198
Panama, Isthmus of, 231
Penny-postage and commercial telegraphs, 8
Perception of pain, 101
Perfections of animals, 208
Pest, the Brandy, I., 13—II., 27—III., 68—IV., 98—V., 119—VI., 142—VII., 167
Philosophy of the External Senses, I., 81—II., 169—III., 249
Photometer, or light-measurer, 196
Pigeon, the carrier, 207
Pipes, manufacture of tobacco, 111
Pity, 115
Planet Saturn, motion of the, 227
Plants and animals, has the Moon any influence upon, 101
Plymouth, floating bridge at, 60
Pocket-book, lines inserted in a, 228
Position of birds at roost, 227
Potter, Dr., extracts from, 27, 54, 59
Princess Elizabeth, letter of, 235
Promise without performance, 107
Proposed route across the Isthmus of Panama, 231
Pulse of the elephant, 103
Purchas, extracts from, 195, 240
Pursuit of virtue pleasant, 181

Quarles, extract from, 189

Raffles, Memoir of Sir T. S., I., 188—II., 199
Railways, the first, 198
Raisins and Currants, commercial history of, I., 103—II., 131
Redbreast, Robin, I., 54—II., 77
Reefs, coral, 134
Resolved Meditations, I., 35—II., 64—III., 104—IV., 135—V., 187—VI., 222
Religion, coldness in, 181
——— influence of, 152
——— inseparable from true education, 144
Religious house, a, 227
Riches, the use of, 181
Rinwell, remark by, 190
Rising, on early, 197
Road-measurers, 181
Robin Redbreast, I., 54—II., 77
Rolleston, extract from, 91
Ropes and Ropemaking, I., 15—II., 31—III., 52
Roost, position of birds at, 227
Rubens and his Works, I., 77—II., 193—III., 217
Rugby School, historical notice of, I., 129—II., 145
Russia, kissing in, 3
Rural Economy for the Months :—
I. January, 39
II. February, 79

Rural Economy for the Months:-
III. March, 117
IV. April, 153
V. May, 183
VI. June, 223

Sabbath, neglect of the, 163
Saint Monica, 38
Saturn, motion of the planet, 227
Savages, want of natural affection in, 72
Sea piece in the Pacific, 195
Selden, extract from, 227
School, Rugby, historical notice of, 129, 145
Scott, extract from, 163
Scriptures, meditation on the, 230
——— interpretation of, 248
Self-examination, 115
Senses, external, philosophy of the 81, 169, 249
Sensual pleasures, 157
Serjeant Glanvil, anecdote of, 189
Shamelessness, 160
Shenstone, remark by, 227
Simile, by Waller, 135
Sinai, Mount, burial place of the convent of, 141
Sinful customs, breaking of, 189
Singing, Wilhem's method of Teaching, I., 23—II., 37—III., 62
Singular anecdote, 139
Situation of the ear in animals, 157
Sketches, Icelandic, I., 9—II., 25—III., 57
——— of Irish Manners and Customs, I., 5—II., 20—III., 55—IV., 95—V., 108—VI., 151—VII., 179
——— of Java, I., 201—II., 225—III., 237—IV., 24
Snow storms, I., 3—II., 51
Soldering metals, improved method of, I., 35—II., 93
Song for the Spring, 147
South, extract from, 248
Southey, extracts from, 144, 195, 224, 228, 232, 240
Spare Minutes, I., 35—II., 64—III., 104—IV., 135—V., 187—VI., 222
Sponge, what is a, 109
Spring, song for the, 147
Springs, wells and fountains, 191, 235
Starlight night, the, 71
Stars, double and multiple, 239
Stepheus, extract from, 141
Story telling, 155
Strathfieldsaye, the seat of the Duke of Wellington, 157
Summer nights in Norway, 239

Tallies, on, 165
Telegraphs, commercial, and the penny-postage, 8
Thinking, 99
Thrifte, the ladder to, 195
Tobacco-pipes, manufacture of, 111
Trifles, 182
True education, religion inseparable from, 144
—— use of riches, 181
Truisms, 227
Truth, search after, 182
Turk, the Great, his dogs, 240
Turnbull, extract from, 205

Untruth, 150
Use, the true, of riches, 181

Virtue, pursuit of, 181
—— and intelligence the only basis of human happiness, 103
Voltaic electricity, 228
Voyage down the Danube, I., 185

Waller, simile by, 135
Warburton, Bishop, extracts from, 230, 232
Warning well taken, 70
Warwick, Arthur, Spare Minutes by, I., 35—II., 64—III., 104—IV., 135—V., 187—VI., 222
Watson, Bishop, remark by, 227
Wealth and its enjoyments, 205
Weather, has the Moon any influence on the, 21
Wedded love, 91
Wellington, Duke of, residences of, described, 135, 155
Wells, springs, and fountains, 191, 235
What is a sponge? 109
Whately, Archbishop, on conscience, 96
Whewell, remark by, 248
Whittier, poem by, 184
Wickliffe's body, burning of, 144
Wilhem's Method of Teaching Singing, I., 23—II., 37—III., 62
Wilkie and his Works, I., 2—II., 50—III., 90
Wolfe, extract, from, 99
Woodward, extract from, 150
Working in metals, 59
Wotton, Sir Henry, extracts from, 31, 134

INDEX TO THE ENGRAVINGS.

Abbey, Coggeshall, 97
——— Furness, ruins of, 161
Alphyn, or chess bishop, 213
Anamorphoses, diagrams illustrative of, 12
Anatomy of the ear, illustrations of the, 83, 84, 85
Ancient tally, 165
Anyer, a port of Java, 201
Aux Rats, trading post on the river, 48

Basaltic columns at Stappen, 25
Beggars, group of, from an early Block Book, 213
Birds, position of, at roost, 228
Block Books, specimens of wood engravings from, 209, 213
Bois, voyageurs des, 41
Brabant, scene in, 217
Bremen, view of, 33
Bridge, floating, on the Hamoaze, 60, 61

Cactus cochinillifer, 244
Canadian fur-hunters, 41
Carrier pigeon, the, 205
Castle of Porto Longone, 233
Cathedral, Lichfield, monument by Chantrey, in, 17
——— Worcester, 65
Caxton, the Alphyn, from his *Game of Chesse*, 213
Chantrey, statuary by, 17, 65, 105
Chapeau de Paille, a picture by Rubens, 193
Chess, diagrams illustrative of, 133, 164, 165
Chessboard, 93
Chessmen, 92, 213
Children, the Sleeping, by Chantrey, 17
Chinese mangle, the, 140
Christopher, St., from an early wood-engraving, 209
Cochineal insects, male and female, 220
Coggeshall Abbey, Essex, 97
Columns, basaltic, in Iceland, 25
Common flax, 32
Costume, national, of Iceland, 57
Cottage girl, the, by Gainsborough, 121
Curved surfaces, diagrams illustrative of the vibration of, 170, 171

Dantzig, view of, 113
Day, the Rent, a picture by Wilkie, 1
Diagrams, illustrative of anamorphoses, 12
——— chess, 133, 164, 165
Diagrams illustrative of an improved method of soldering metals, 36, 37
——— the pedometer, 181, 182
——— photometer, 196, 197
——— the vibration of strings and plane and curved surfaces, 171, 172, 173, 174
Distraining for Rent, a picture by Wilkie, 49
Doria, Princess, washing the feet of the pilgrims, a picture by Wilkie, 89

Early wood engravings, specimens of —The Alphyn, or Chess bishop, 213—St. Christopher, 209—Group of beggars, 213
Elba, castle of Porto Longone, in, 233
Electricity, voltaic, illustrations of, 228, 229, 230
Examples of figures produced by vibrating surfaces, 159

Family, a Tudar, in the Neilgherry hills, 153
Feather, mechanism of a, illustrations of the, 221, 222
Figures produced by vibrating surfaces, 169
Fire pheasant of Java, 237
Flax, the common, 32
Florence, statue from the Gallery of, 81
Floating bridge on the Hamoaze, 60, 61
Fountain, ornamental, 192
——— of the Fullonica, at Pompeii, 236
Frog prepared for galvanic experiments, 228
Fur-hunters, Canadian, 41

Gainsborough, picture by, 121
Grafting, illustrations of, 148, 149
Greenhouse, an indoor, 100

Hale, Sir Matthew, portrait of, 29
Hall of Rugby School, 129
Hamoaze, floating bridge on the, 60, 61
Hare, skull of the, 153
Hemp, 6

Iceland, the Trehyrning, in, 9
——— Basaltic columns at Stappen, 25
——— national costume, 57
Illustrations of anamorphoses, 12
——— the anatomy of the ear, 83, 84, 85
Illustrations of early block books, specimens of, 209, 213
——— Chess, 92, 93, 133, 164, 165, 203, 204, 205
——— grafting, 116, 148, 149
——— improved method of soldering metals, 36, 37
——— the photometer, 196, 197
——— the vibration of strings, and plane and curved surfaces, 171, 172, 173, 174
——— of voltaic electricity, 228, 229, 230
Insects, cochineal, 220

Java, scenery of, 201
Javanese court and war dresses, 241
——— fire pheasant, 237
——— village, 225

Koonoor pass, in the Neilgherry hills, 137

Lubeck, entrance to, 73

Machinery for ropemaking, 52, 53
Mangle, the Chinese, 140
——— the common, varieties of, 140, 141
Mechanism of a feather, illustrations of the, 221, 222
Metals, improved method of soldering, 36, 37
Monuments by Chantrey, 17, 67

National costume of Iceland, 57
Neilgherry hills, Koonoor pass, in the, 137
——— a Tudar family in the, 153
Nest of the redbreast, 77

Ornamental fountain, 192

Paille, Chapeau de, a picture by Rubens, 193
Pass in the Neilgherry hills, 137
Pedometer, the, 181, 182
Pheasant, fire, of Java, 237
Photometer, diagrams illustrative of the, 196, 197
Picture by Gainsborough, 121
Pictures by Rubens, 177, 193, 217
——— Wilkie, 1, 49, 89
Pilgrims, washing the feet of, by Wilkie, 89
Plane and curved surfaces, diagrams illustrative of, 169, 170, 171
Plymouth, floating bridge near, 60, 61
Pole-cat, skull of the, 153
Pompeii, fountains at, 192, 236
Porto Longone, castle of, 233
Portrait of Sir Matthew Hale, 29
——— Sir Thomas Stamford Raffles, 188
——— Rubens, 177
Post, trading, in Canada, 48
Princess Doria washing the feet of the pilgrims, 89

Raffles, Sir Thomas Stamford, portrait of, 188
Redbreast, nest of the, 77
Rent Day, the, by Wilkie, 1
——— Distraining for, by Wilkie, 49
Resignation, from a statue by Chantrey, 65
Rope-making machinery, 52, 53
Rubens, pictures by, 177, 193, 217
Rugby School, entrance to the hall and part of the quadrangle, 129
——— east view of the school-house, 145

Scene in Brabant, from a picture by Rubens, 217
School-house at Rugby, east view of, 145
Situation of the ear in animals, illustrations of, 153
Skull of the hare, 153
——— polecat, 153
Slave, the listening, 81
Sleeping children, by Chantrey, 17
Soldering metals, improved method of, 36, 37
Sponge, 109
Stappen, basaltic columns at, 25
Statuary by Chantrey, 17, 65, 105
Strings, diagrams illustrative of the vibration of, 171
Surfaces, plane and curved, vibration of, 169, 170, 171
——— vibrating, 169

Tobacco-pipe crucible, 112
——— mould, 111
Trading post on the river Aux Rats, 48
Trehyrning, the, in Iceland, 9

Ulm, view of, 185

Vibrating surfaces, examples of figures produced by, 169
Vibration of strings, diagrams illustrative of, 171
Village in Java, 225
Voice, organs of, 175, 176

Wilkie, pictures by, 1, 49, 89
Worcester Cathedral, statue by Chantrey in, 65

We have to thank many of our Correspondents for their friendly suggestions. Some of these we shall avail ourselves of,—others require consideration,—but a third class, relating to several organic changes in the nature and form of our Periodical, we respectfully decline. At the close of our last volume we stated, at some length, the principles upon which our Work is conducted; and we may again repeat that costly embellishments are quite incompatible with the pretensions as well as with the permanent stability of so low-priced a work as the *Saturday Magazine*. Our engagement with the public is to produce a work of utility; a book of varied and valuable information, and not one of mere decoration. This has been our object from the commencement of our labours; to this end our unceasing efforts will continue to be directed, and we gratefully acknowledge the assistance and support we have received in the discharge of our undertaking.

THE

Saturday Magazine.

N° 610. JANUARY 1ST, 1842. {PRICE ONE PENNY.

THE RENT DAY. FROM SIR DAVID WILKIE'S PICTURE

SIR DAVID WILKIE AND HIS WORKS.

I.

SINCE the sudden and lamented death of Sir David Wilkie the works of that admirable artist have acquired a double value, and any information respecting them or their author is naturally sought for with avidity, and read with interest. We have therefore collected from various sources such notices as appear best calculated to set forth the character of Wilkie with regard both to his public and his private life.

From the time of Hogarth no artist has so effectually appealed to the understanding and sympathies of the people as Wilkie. In the most essential particulars, the style of art is the same with both artists. In Wilkie's productions we find great variety, refinement, and acuteness in the observation of what is characteristic in nature, and the treatment of many of his subjects is strikingly dramatic. Hogarth has all this, and much more, which not only renders him distinct from, but raises him greatly above, the modern artist. Wilkie does not seem to have possessed the power of producing moral dramas in whole series of pictures, but contents himself with the representation of one single effective scene. Dr. Waagen says—

"If I might compare Hogarth with Swift, in his biting satire, with which he contemplates mankind only on the dark side, and takes special delight in representing them in a state of the most profound corruption, of the most frightful misery, I find in Wilkie a close affinity with his celebrated countryman, Sir Walter Scott. Both have in common that genuine refined delineation of character which extends to the minutest particulars. In the soul of both there is more love than contempt of man. Both afford us the most soothing views of the quiet genial happiness which is sometimes found in the narrow circle of domestic life, and understand how with masterly skill, by the mixture of delicate traits of good-natured humour, to heighten the drama of such scenes; and if, as poets should be able to do both in language and colours, they show us man in his manifold weaknesses, errors, afflictions, and distresses, yet their humour is of such a kind that it never revolts our feelings. Wilkie is especially to be commended, that in such scenes as the Distress for Rent he never falls into caricature, as has often happened to Hogarth, but with all the energy of expression, remains within the bounds of truth.

Sir David Wilkie was the son of the Rev. David Wilkie, the minister of Cults, near Cupar, in Fife, author of a work called *Theory of Interest, Simple and Compound, derived from first Principles, and applied to Annuities of all Descriptions.* David was born about the year 1785, in the manse, or minister's house, formerly celebrated as the retreat of the murderers of Archbishop Sharpe. Sir David always spoke of his father with the strongest affection, and when his talents had procured him both fame and reward, he erected a monument to his memory, from the hand of his friend, Sir Francis Chantrey, who we regret to say has recently finished his course.

When and by what means Wilkie acquired a love for art we have not heard: it is, however, most probable that he was born an artist, and that the use of his pencil became as it were, an instinct of his nature, as soon as he could hold one. An anecdote has been related which illustrates his early love for character.

We happened some time ago to be living near Canterbury, (says the narrator) when we were accosted by a north-country peasant, a wandering gardener, from the county of Fife, who took a paper from his pocket-book, and desired us to read it. This was a certificate of character written by the Rev. Mr. Wilkie, of Cults, in Fife, setting forth that the bearer was sober and so forth. "I have heard," said the Scot, "that the minister has a son in London, who has grown a great man. I wonder which of his sons it can be." "It is David," we answered, "and a far-famed man he is." "David!" he exclaimed, "what, wee curly-headed David? wha would have thought that now? And what is he great for, can ye tell me?" "For painting," we replied. "Painting!" the man of Fife turned up his eyes; "painting! now that brings to my mind that he used to draw the heads of the boys in the school, and me among the rest; and when he saw a boy mounting the form for no saying his psalm, he was gloried. I maun see him some of these days."

By the time Wilkie had attained his fifteenth year his love for art and his skill in the use of his pencil were such that his father and friends agreed that both deserved cultivation. The young artist was therefore sent to Edinburgh, where he was regularly entered a student of the Trustees' Academy, then under the direction of Mr. John Graham. This Institution was originally formed for the encouragement of design in manufactures, but Mr. Graham, in extending its objects to the culture of the fine arts, was allowed to propose certain prize-subjects for competition. One of these subjects was a scene in Macbeth; and Wilkie obtained the second prize, the first being awarded to a gentleman named Thomson. Wilkie always entertained a grateful remembrance of Graham's kindness; and preserved in his house at Kensington an engraving from a picture by this his first master. At Edinburgh, Wilkie numbered among his fellow-students William Allan, the present academician, and successful follower in his footsteps, and John Burnet, whose engravings of Wilkie's pictures have done so much to promote the reputations both of the artist and the engraver. At this early period of his life our artist gave some promise of his after excellence. One of his first productions was an "Inside of a Public-House;" another, "Pitlassie Fair." It was at Pitlassie that he saw his "Blind Fiddler" conducted from booth to booth, and thus were suggested to him the leading features of that admirable picture. Wilkie at this time had never seen a picture by Ostade, but yet both of these early productions, as Graham assures us, are in the style of that great master; the breadth, character, and expression were admirable. One of his early works was a public sign in the town of Cupar; but it has been taken down and carefully preserved as one of the early productions of a man whose works belong to the world.

The usual period of study at the Trustees' Academy was two years; but Wilkie remained there two years longer (as did Burnet and others), and in the year 1804 came to London, with the genius and the ambition of an artist. Alone and without patronage, we need not wonder that, even with his remarkable powers, his path was difficult and uncertain. But whatever be the powers of a man, provided he be resolutely industrious he will not fail to meet encouragement of some kind. Wilkie provided himself with a few of the results of his skill and industry, and one of his first attempts to dispose of his productions was an application to a picture-dealer in Great Portland Street,—a man who had been companion of the intemperate George Morland, and one of his biographers. Wilkie took with him some panels wrapped in a silk handkerchief, and humbly requested to submit them for inspection. The son of the picture dealer was taking care of the shop while his father was smoking his pipe in a back parlour. This man overhearing Wilkie's statement that he had some pictures for sale, bawled out, "Has he brought a George Morland?—an Ibbetson?—a Rathbone?—a De Loutherbourg?" and receiving negatives to these queries, said that the artist need not trouble himself to untie his bundle. Thus the graphic gems of our artist were then despised by those men who two years later "to obtain what the small silk handkerchief contained would have gladly selected several of the painted panels, and covered their dimensions with golden coin!"

Towards the end of 1806 Wilkie, being very short of money, sent some of his paintings to Andrews, a picture-frame maker at Charing-Cross, to sell. One of them, the original Blind Fiddler, stood long in the window; a circumstance which, in the present state of our feelings, we find it difficult to account for. At last, Mr. Stuart, of the *Morning Post* Newspaper, who had often stopped

to admire it, was seen doing so by an old acquaintance, who recommended him to purchase it as a work of merit. He went into the shop and inquired the price. It was five guineas. He concluded the purchase, and told Andrews to put the picture into a frame.

In the spring of 1807, some friends being at dinner with Mr. Stuart, Mr. Wordsworth the poet mentioned a new artist of unusual and singular merit, who had made his appearance, and described Wilkie's picture, the first he exhibited at the Royal Academy, and which had excited great attention. Mr. Stuart then produced the picture he had purchased of Andrews; and the poet expressed his firm belief that it was by Wilkie. Mr. Stuart afterwards visited the exhibition at the Royal Academy, examined Wilkie's picture, and had no doubt that the one purchased by him was by the same hand. Guided by the catalogue he proceeded immediately to Mr. Wilkie, then residing in Upper Norton Street, whom he found painting the subject of "the Blind Fiddler" over again: the size was rather larger; the background something different; and two new figures were introduced into the composition. He proposed to Wilkie to paint a picture for him; but the artist declined, stating that he was busily engaged to paint for Lord Mulgrave, and that his design was then to earn fame, not money. He added that the picture possessed by Mr. Stuart was one of his latest productions, and was glad it had fallen into such good hands.

Several years afterwards, Mr. Stuart being at dinner with Sir George Beaumont in Grosvenor Square, Sir George said to him, "So, Mr. Stuart, I find you have the original of my picture, 'the Blind Fiddler.'"

About seven years ago Mr. Stuart met Sir David Wilkie in company at Mr. Rennie's, in Chesham Place, and entered into conversation with him respecting this picture. He recollected all the circumstances, and added that Andrews knew well who he was, and where to find him, though he had told Mr. Stuart the contrary, when that gentleman expressed a wish to have another picture by the same artist.

A few years ago Sir D. Wilkie called on Mr. Stuart, and reviewed his picture, the original "Blind Fiddler."

KISSING IN RUSSIA.

This is the national salute—in universal vogue from remote antiquity, rather a greeting than a caress—derived equally from religious feeling and from oriental custom. Fathers and sons kiss—old generals with rusty moustachios kiss—whole regiments kiss. The Emperor kisses his officers. On a reviewing day there are almost as many kisses as shots exchanged. If a Lilliputian corps de cadets have earned the Imperial approval, the Imperial salute is bestowed upon the head boy, who passes it on with a hearty report to his neighbour, he in his turn to the next, and so on, till he has been delegated through the whole juvenile body. If the Emperor reprimand an officer unjustly, the sign of restoration to favour as well as the best atonement is—a kiss. One of the bridges in Petersburgh is to this day called *Potzalui Most*, or Bridge of Kisses (not of Sighs), in commemoration of Peter the Great, who, having in a fit of passion unjustly degraded an officer in face of his whole regiment, kissed the poor man in the same open way upon the next public occasion on this very bridge. On a holiday, or *jour de fête*, the young and delicate mistress of a house will not only kiss all her maid servants, but all her men servants too, and, as I have mentioned before, if the gentleman venture not above her hand, she will stoop, and kiss his cheek. As for the Russian father of a family, his affection knows no bound; if he leave his *cabinet d'affaires* ten times in the course of the morning, and enter his lady's saloon above, he kisses all his family when he enters, and again when he leaves the room; sometimes indeed, so mechanically, that, forgetting whether he has done it or not, he goes a second round to make all sure. To judge also from the number of salutes, the matrimonial bond in these high circles must be one of uninterrupted felicity—a gentleman scarcely enters or leaves the room without kissing his wife either on forehead, cheek, or hand.—*A Residence on the Shores of the Baltic.*

SNOW-STORMS. I.

The snow-storms of England are seldom so dangerous, and perhaps we may say so grand, as those of mountainous countries. We are not, therefore, so forcibly impressed by these phenomena as Highlanders and the inhabitants of Alpine countries; and, indeed, unless we attend to the recorded instances of celebrated snow-storms in Scotland and other countries, we can form but a faint idea of the subject. It may be interesting to notice briefly some of the most formidable of these phenomena, with which the northern parts of our island have been visited.

The shepherds of Scotland hand down from father to son the terrors of the "Thirteen Drifty Days," a term applied to a period when Scotland was visited by a fearful snow-storm, in the year 1660: indeed, it is said that even now, the mention of this period to an old shepherd, on a stormy winter's night, seldom fails to impress his mind with religious awe, and often sets him on his knees before that Being who alone can avert such another calamity. For thirteen days and nights the falling and drifting of the snow never abated: the ground was covered with frozen snow when it commenced, and during all the time of its continuance, the sheep were without food. The shepherds had the pain of seeing their poor helpless flocks die off, without having the power to shield them either from cold or from hunger. About the fifth day of the storm, the younger sheep became sleepy and torpid, which was generally followed by death in the course of a few hours, or, if exposed to the cutting wind, they were sometimes deprived of life almost immediately after the torpor commenced. By the tenth day of the storm, so many sheep had died, that the shepherds began to build up large semicircular walls of the frozen dead bodies, in order to afford some sort of shelter for the sheep which still remained alive. But these poor helpless creatures began by this time to suffer so much from want of food, that they tore one another's wool with their teeth.

At the termination of the storm, on the thirteenth day, there were many farms on which not a single sheep was left alive. Misshapen walls of dead bodies, surrounding a central knot of other sheep, also dead, was the sight which in too many instances met the eye of the ruined shepherd or farmer. On those farms which were situated in the glens between mountains, many of the sheep survived the storm, but their constitutions suffered so severely, that few ultimately recovered. Nine-tenths of all the sheep in the south of Scotland are supposed to have perished by this snow-storm. In the pastoral district of Eskdale Muir, out of twenty thousand sheep, only forty young wethers and five old ewes were preserved. Many of the farms were so utterly ruined, as to become tenantless and valueless for several years.

About sixty or seventy years after this event, one single day of snow was so extraordinarily severe, that upwards of twenty thousand sheep, as well as some of the shepherds, were destroyed. An anecdote has been related, in connexion with this storm, which shows the degree of attention with which the Scottish shepherds notice the appearances of the sky. The day in question was the 27th of March: it was Monday, and on the previous day the weather was remarked to be unusually warm. A party of peasants, going home from Yarrow church on Sunday evening, saw a shepherd who had collected all his sheep by the side of a wood. Knowing that he was a religious man, and unaccustomed to collect his sheep in that manner on the Sabbath, they asked him his motive, to which he replied, that he had noticed certain appearances in the sky which led him to conclude that a snow-storm was approaching. All the villagers laughed at him; but he bore their jokes good-humouredly, and provided for the safety of his sheep. The fatal storm occurred on the following day, and this

shepherd was the only one in the vicinity who saved the whole of his sheep. We may remark, in reference to weather-observations such as these, that provided they be kept within reasonable limits, they are exceedingly valuable. The persons who put undivided faith in the nonsense of "weather almanacs," and in the popular omens and prognostics which are so abundant, are liable to be duped and led into repeated errors; but those who pretend to despise the experience of humble observers, and to lay down doctrines relating to the weather from theory only, err almost as much on the other side. Cautious induction, derived from carefully observed facts, is the only mode of arriving at truth in such matters.

Perhaps the most extraordinary snow-storm with which Scotland was ever visited, was that which occurred on the 24th of January, 1794; extraordinary both in relation to the enormous depth to which the snow accumulated in a few hours, and to the devastation which it occasioned. Mr. Hogg, so well known as the "Ettrick Shepherd," was then a young man, and was involved in the consequences of this storm in a remarkable manner. In the evening of his life he wrote a graphic account of the occurrence, from which we shall borrow so much as will suffice to convey an idea of this remarkable storm.

On the evening preceding the night of this occurrence, Mr. Hogg had appointed to meet a few young friends who had formed themselves into a sort of literary society for the reading and criticism of essays and papers. They were all shepherds, and were accustomed to meet at each other's houses, where they frequently remained together all night. On the evening in question a meeting was to be held at Entertrony, a place distant twenty miles from Hogg's residence, over a wild and rugged country. He had written what he terms a "flaming bombastical essay," and set off with it in his pocket, to attend the meeting of his compeers. As he was trudging along on foot, he thought he perceived symptoms of an approaching storm, and that of no ordinary nature. There was a dead calm, accompanied by a slight fall of snow, and a very unusual appearance was presented by the distant hills. He thought of the flock of sheep which was usually under his care, but which was now consigned to the charge of another, and he began to think it would be prudent to retrace his steps. After a long contest between his inclination and his sense of duty, he turned back with a heavy heart, and wended homewards. On his road he called at the house of an elder relative, who told him that the symptoms foreboded a snow-storm during the night, and advised him to hasten homeward with all speed. The old man further stated, as a guide to Hogg, in conducting the sheep to a quarter where they would be best sheltered, that if, during his journey, he should see any opening in the *rime* or frost-fog, he might conclude that the storm would spring up from that quarter. Hogg, however, observed no such opening in the fog, and finally reached home, where he went to bed, intending to rise at a very early hour, and go out to find shelter for his sheep.

Just before he retired to rest, he observed a brightness in the north, and thought of his friend's advice; but thought he might postpone acting thereon. About two o'clock in the morning a storm commenced with such suddenness and fury, that he was startled from his bed, and, on putting his arm out into the open air, he found the air so completely overloaded with falling and driving snow, that, but for the force of the wind, he felt as if he had thrust his arm into a wreath of snow. He slept in a kind of outhouse, distant about fourteen yards from the dwelling-house, and, upon going down stairs, he found this place packed with snow nearly as high as the walls of his house. With great difficulty he reached the dwelling-house, and found all the inmates in a state of dismay. The state of the sheep belonging to the farm became an object of anxiety to all; eight hundred of these poor animals being out on a very exposed hill at a considerable distance from the houses. They made a hasty breakfast, joined in a simple but earnest prayer for the safety of all, and the male inmates started on a perilous venture, having previously filled their pockets with bread and cheese, sewed their plaids around their bodies, tied on their hats, and provided themselves each with a staff.

As soon as they got out into the open air (two hours before day) the darkness was so great, that to grope their way was the only method of proceeding. Sometimes they had to wade through masses of snow, at others to roll or clamber over them; while the wind and drift were so violent, that the travellers were forced, every three or four minutes, to hold down their heads to recover breath; so perplexing were the difficulties which they had to encounter in the utter darkness, that they were two hours reaching a distance of three hundred yards from the house. As day dawned, they were able to advance a little faster, one taking the lead, and the others following close in the rear. This leadership could only be maintained three or four minutes at a time, on account of the piercing wind which blew uninterruptedly in their faces. In a short time one of the party, who, as leader, had been unconsciously leading them out of the way, was found nearly insensible, and was with some difficulty recovered; shortly afterwards Mr. Hogg fell down a precipice, and was nearly buried in the snow.

After innumerable disasters, they at length reached one of the flocks of sheep. The sheep were standing in a close body, one-half of the number being covered with snow to the depth of ten feet, and the other half being forced up against a brae. The outer ones being with some difficulty extricated, the rest were, to the agreeable surprise of the shepherds, able to walk out from beneath the superincumbent load of snow, which had consolidated into a mass. Mr. Hogg, quitting the other shepherds, proceeded onward to a spot where another flock had been left. He was able to extricate about half of these, and to procure them a place of safety; after which he made the best of his way home again, groping along as well as he could, for although day-time, it was impossible to see twenty yards around. All the party succeeded in reaching home in safety, after a very exhausting day's labour. On the next morning they started, with a somewhat clearer sky, to the rescue of the remaining sheep, and found the snow to have been so unprecedentedly deep as to conceal every vestige of the lofty trees in some of the glens. Day after day the party sallied forth, until they had found and brought home, either dead or alive, nearly the whole of the sheep, most of which were found buried to the depth of from six to ten feet in snow. All were alive when found, but a large number died shortly afterwards from the effects of the hardships the poor animals had undergone.

By this one night's snow-storm, seventeen shepherds in the south of Scotland lost their lives, while upwards of thirty more were carried home insensible. One farmer lost seventy-two scores of sheep, and many others from twenty to thirty scores each. In some cases whole flocks were overwhelmed with snow, and no one knew where they were till the dissolving snow exposed the dead bodies. In one instance twelve scores of excellent ewes, all nearly of one age, were missing the whole time that the snow lay upon the ground; but when the snow was melted, the sheep were discovered all lying dead, with their heads turned one way. Many hundreds were, by the violence of the storm, driven into waters, burns, and lakes, where they were buried or frozen up, and these the flood carried away, so that they were never again seen or found by the owners. At one place, where several streams flow into the Solway Frith, there is a

a kind of shoal, called the Beds of Esk, where the tide throws out and leaves whatever is carried into it by these streams. At this spot, when the flood after the storm had subsided, were found the dead bodies of two men, one woman, forty-five dogs, three horses, nine black cattle, one hundred and eighty hares, and one thousand eight hundred and forty sheep.

Scotland has been, and indeed now is, frequently visited by snow-storms of considerable severity, though not comparable to those just described; and Mr. Hogg gives a pleasing account of the manner in which these visitations are borne by the inhabitants. "The daily feeling naturally impressed on the shepherd's mind," says he, "that all his comforts are so entirely in the hand of Him that rules the elements, contributes not a little to that firm spirit of devotion for which the Scottish shepherd is so distinguished. I know of no scene so impressive as that of a family sequestered in a lone glen during the time of a winter storm; and where is the glen in the kingdom that wants such a habitation? There they are left to the protection of heaven; and they know and feel it. Throughout all the wild vicissitudes of nature, they have no hope of assistance from man, but expect to receive it from the Almighty alone. Before retiring to rest, the shepherd uniformly goes out to examine the state of the weather, and make his report to the little dependent group within; nothing is to be seen but the conflict of the elements, nor heard but the raving of the storm: then they all kneel around him, while he recommends them to the protection of heaven; and though their little hymn of praise can scarcely be heard even by themselves, as it mixes with the roar of the tempest, they never fail to rise from their devotions with their spirits cheered, and their confidence restored, and go to sleep with an exaltation of mind, of which kings and conquerors have no share."

In a second paper on this subject we shall relate some remarkable instances of human endurance, consequent on snow-storms.

GOD OMNIPRESENT.

THE Lord, the high and holy One,
Is present everywhere;
Go to the regions of the sun,
And thou wilt find Him there!

Go to the secret ocean caves,
Where man hath never trod,
And there, beneath the flashing waves,
Will be thy Maker, GOD.

Fly swiftly, on the morning's wing,
To distant realms away,
Where birds in jewelled plumage sing
The advent of the day;

And where the lion seeks his lair,
And reindeer bounds alone—
God's presence makes the desert fair,
And cheers the frozen zone.

All Nature speaks of Him who made
The land, the sea, and sky;
The fruits that fall, the leaves that fade,
The flowers that bloom to die;

The lofty mount, and lowly vale
The lasting forest trees,
The rocks that battle with the gale,
The ever-rolling seas.

All tell the Omnipresent Lord,
The God of boundless might—
In every age and clime adored,
Whose dwelling is the light! P. B.

THE most common aberrations of ignorance, consisting in the false references of cause and effect, are imputable to superstition and credulity —SIR GILBERT BLANE.

SKETCHES OF IRISH MANNERS AND CUSTOMS.

I.

So much has been written, and so well written, about Ireland, that it may appear presumptuous to suppose a few little anecdotes worthy of recording: but I have been so much amused and interested, by the things that are daily said and done before me, that I think a simple relation may amuse others, and perhaps increase the kindliness of feeling and interest for the Irish peasantry, which are so desirable in the minds of my countrymen; and as the efforts of the tiny mouse in the fable were not in vain, so these little stories may, in their unvarnished truth, add their mite to the great cause of real union between the countries.

I had made a short tour in Ireland some years ago, and on returning to the country probably for a residence of some length, I was most agreeably struck with the great improvement ten years had made in the houses, the roads, the tillage, and the people. It was the same part of the country, the sea-coast of the county Antrim, and at the same time of year. Numbers of new, neat, thatched, or slated houses, with little sashed windows, had sprung up and replaced, or closed in and hid the ancient cabin, scarcely higher than the manure heap by its side, and its window holes stuffed with such fragments as even Irish beggar ingenuity could no longer attach to any part of the family wardrobe. The roads full of great stones, no longer went straight up the mountain side, as if determined to show that *impossible* was a word unknown to the road-makers or the road-goers, and certainly exhibiting to the tourists the wild mountains, the deep glens, the broad ocean, and the dim peaks and crags of the distant Scotch coast in the greatest perfection. Now excellent roads wind amongst the little hills and rocks, which are as an advanced guard to the mountains, with an ingenuity most creditable to the engineer, and satisfactory to the wheels: but the traveller loses much in the view, and does not always gain much in safety. The road is in some parts so close to the cliff, that vast fragments overhang it: and a party in the winter had a most narrow escape—frost and rain had loosened a great block which fell down just as their car had passed; there was scarcely a foot between them and destruction, and such accidents are not rare after bad weather.

There was a great increase of land under cultivation, and greater variety of crops, and an improvement in the neatness of their farming operations; though still many a field, all yellow with the "gowans fine," disgraced their husbandry. The tint is so pretty in the landscape that one is sorry in the poet's flower to recognise the farmer's pest. All the people were busy with the potatoes, &c. Perhaps no other season would have brought such numbers under our observation in so short a time, and I was surprised to see a *much* larger proportion of perfectly clean whole, white shirts than I should have seen on the same number of English peasantry in any of the counties I have known well; and I think the appreciation and use of good linen prevails to an extent quite unsuspected in England.

I have often seen a good clean shirt covered with a mass, or heap, or string of rags, which seemed only an incumbrance; warmth there could be none, as the breeze scattered them at its pleasure, till the man looked like the doll's wig under a stream of electricity, coat and waistcoat whisking round horizontally. The quantity of shoes and stockings are greatly increased, particularly amongst the men; indeed except the very lowest of the beggars, I have hardly seen a barefooted man. If the English beggars present their tatters to Ireland, the Irish just above mendicity surely send their half-worn shoes and stockings to England. I have not yet seen any of the holes and slipshod slovenliness to which bare

feet is infinitely preferable; if they do wear them, they are well shod.

There is a good deal of the Welsh plan of putting on shoes and stockings at the entrance of the town or village, and taking them off again when the ceremony of shop or market is over. And here, as in Wales, the strong firm step of the women and girls is very remarkable. Some of the girls are good steady knitters, walk, talk, and scramble with their needles in full activity, and might add considerably to their comforts if they pursued it steadily. A stout wild girl, our guide to some waterfalls, told us she could knit a full-size pair of very strong socks in a day; two pair were bespoke, and a prospect of a larger order held out to her if she did them well. Ten days passed and we heard nothing of Campbell and the socks; at last we spied her in holyday trim in the village. She told us the socks were *nearly* done; when they would be quite done appeared very doubtful.

This girl was a very amusing specimen of a real, wild, Irish girl, hardy, shrewd, and simple, with a sharpness of observation peculiar to her country; her hearty laugh at seeing me lifted over the stream made us laugh also. I asked her, "If I was not well taken care of?" "Faith and troth, an he's not bad to ye," was her comical reply. We were gathering the wild veronica, and speaking of the legend, to which she listened with great attention, and made many efforts to pronounce the saint's name.

We presently came to the great brawling stream after its fall, swollen by several days of such rain as people in England know nothing about, and the passage over lumps of rock, at jumping distances, with the black, boiling, roaring torrent, rushing along, looked rather too much for me, and I proposed waiting whilst my companion went on to the fall: the surprise and derision on her face was capital, and away she went over to show me the safety of the measure. I certainly thought her broad bare feet had much the advantage of mine on the wet slippery rocks; however, I screwed up my courage—she grasped her half-knit sock in one hand, and clutched tight hold of me with the other, and I do not think many girls of sixteen could have given such man-like support to uncertain steps,—over we went safely, but it was disagreeable enough.

The water-fall was worth some trouble: it was fifty or sixty feet high, perhaps more; the water dashed, in two very strong parallel streams, perpendicularly to the bottom, quite unchecked, till it met the fragments below with a noble roar, scattering clouds of spray, which fell like a heavy shower where we stood, a hundred yards off, with a chill that was very disagreeable. The sun was trying to shine through, without much success, but the trees and rocks beyond were glowing in brightness, and the whole scene was one of exquisite beauty. Campbell thought it very odd that I should not have seen before what she saw every day, and assured me that the preceding day the fall was so furious it would have *feared* me to look at it.

She took us to a fall of another stream, much higher and blacker: there were two falls of sixty or more feet deep each, with a short inclined plane, like a Welsh cataract, combining them; the rock rose like black walls crested with trees, and wherever a morsel of soil could rest a tree shot out; but the fall is merely a cleft in the rock, too narrow for much beauty, and very difficult to see, as it makes an angle from its first to its second fall, and the whole height can hardly be seen from any point; the path to it is very narrow, steep, and slippery; and Campbell said few ladies would venture; but I suspect that was said to restore my self-respect after my fears at crossing the stream; for there was nothing beyond fatigue to apprehend at the path; a false step would have been checked immediately by the trees and bushes on the steep bank.

Campbell was very communicative about her affairs, and seemed to think it hard that she was sixteen and had not a bachelor. A girl of her acquaintance had married at fifteen: she thought that *rather* early, but at sixteen it was quite time to begin house-keeping. "Let me see," said I, "if you are fit to be married,—can you make a shirt?" "That can I." "Can you milk a cow?" "Rightly, if there were twenty of them." "Can you cook a dinner?" "Aye." "Could you keep your temper if your husband was cross?" "Eh, fegs! may be I'd be the crassist o' the two." The laughter so honest and unexpected an answer occasioned put an end to the matter; it is a good sample of the spirit and originality of an Irish talk; and it is curious how peculiarly straightforward and precise they are in their replies on common matters, contrasted with their clever evasions and subterfuges in the witness-box, or if they apprehend any advantage will be taken of them. In speaking to an English person one can quite anticipate the style and tone of the replies; but in Ireland there is perpetually something strange and quaint, which "like unexpected light surprises."

Campbell had probably only her knitting needles for dowry, and will marry some boy with only a spade for his fortune. We received a note indited by the public letter-writer of the village for a man we had employed, begging our "Honour would be pleased to settle the small bill, being in great want of the same"—the amount was 8*d*. We heard afterwards that it was his wedding-day, and that the eight-pence was the income upon which the happy pair were to begin housekeeping.

We encountered rather an odd wedding party lately; there were fifteen or sixteen persons, young and old, men and women; the procession headed by the bridegroom pretty considerably tipsy; the bride in her blue cloak and white cap, with the usual redundant borders, and a very red face, and another man and woman, all arm in arm. They had been three miles to Paddy Mac Ghie's, a public-house, a convenient distance, midway between the two chapels where the clergy met and married them; and they were returning to finish the day at another public-house at the expense of the new couple. On the ensuing Sunday the whole party reassembled to "make an appearance," that is, go in a body to mass, and then to a public-house, where the jovialities of the wedding-day were repeated at the expense of the friends. The bridegroom's brother was with difficulty persuaded to join the "appearance;" he absolutely refused going to the wedding because his leave had not been asked, and it was not to his "plasement." The party were returning home at half-past eleven, some very steady, some rather excited, and two men in the most ludicrous degree of drink; singing, crying, fighting, embracing each other with an uproar only practicable to Irish throats, till the police captured them, and their "appearance" ended in their appearing before the magistrate: but this is very uncommon.

ON MOSAIC-WORK. I.

ONE of the most ingenious modes of disposing materials in an ornamental form is that which is known by the name of *mosaic-work*, which consists in the admixture of small pieces of differently-coloured substances so disposed as to produce a picture or device.

Critics are divided in opinion as to the origin and meaning of the word *mosaic*, some deriving it from *mosaicum*, a corruption of *musaicum*, which in its turn was a corruption of *musivum*, the name by which it was known to the Romans. Scaliger derives the name from the Greek μούσα, and imagines that the name was given to this sort of work, as being very fine and ingenious.

The materials thus inlaid, or joined in small pieces, are very various, comprising precious stones, marble, stone of inferior quality, plaster, enamel, wood, &c.; and there is evidence that the art of working such fragments into an ornamental device was known in high

antiquity, for the tesselated pavements of the ancients are clearly examples of mosaic-work. We are told in the book of Esther, that in the palace of Ahasuerus was "a pavement of red, and blue, and black marble." Athenæus speaks of the rich pavements in the palace of Demetrius Phalereus (B.C. 312), and Hiero, king of Syracuse (B.C. 270), is said by the same author to have had an extraordinary ship constructed, in which the tesselated pavements of the cabins represented the whole fable of the Iliad.

The Romans carried the art of constructing such pavements to the greatest extent, since in all parts of Europe once included within the Roman Empire, specimens of them are from time to time discovered. One of the finest extant was discovered at a village near Seville, in the year 1799, at the depth of three feet and a half from the surface. It extends about forty feet in length, by nearly thirty in breadth, and contains a representation of the circus-games, in a parallelogram in the centre, three sides of which are surrounded by circular compartments, containing portraits of the Muses, interspersed with the figures of animals, and some imaginary subjects. In the race-course are seen a chariot overturned, the charioteer thrown out of his seat, and horsemen dismounted. The charioteer, having been injured by his fall, is supported by two men belonging to a different faction or party, as may be ascertained by their costume, which in all the figures is well represented. The horses are of a deep brown colour; their tails are cut as in the modern fashion, and they have a generally spirited appearance. Various persons interested in the games appear in other portions of the course, and beyond it; but part of the pavement has been destroyed by time, and by the rough usage of the workmen by whom it was discovered. A double row of circular compartments bound the sides of the course, some of which are entire. Each is about three feet and a half in diameter, ornamented by a broad circular border as a frame. The whole plan is finished by an exterior border, highly embellished. Nine of these compartments are occupied by busts of the Muses, arranged after the manner prescribed by Hesiod, and in the order of the books of Herodotus, but alternately, so that a compartment containing a mask or an animal, or some other subject, is always interposed between two of the Muses. The name of each Muse is inscribed in her respective compartment, and several have their attributes, concerning which antiquaries have been frequently at variance. The countenances of the Muses are handsome, deep brown, as if belonging to a southern climate, with regular features, and fine large animated eyes. All have auburn hair, artificially disposed in different fashions, and in some instances ornamented. The other compartments which bound the circus are occupied variously; a centaur, children in differently-coloured tunics, animals, birds, fruit, flowers, &c., being among the objects represented. This elaborate specimen is supposed to have belonged to the hall of the baths of a palace, and to have been constructed prior to the reign of Domitian (A.D. 81).

Another beautiful mosaic pavement was discovered at Lyons, in the year 1806, and is supposed to be about 1800 years old. It is composed of small marble cubes, sometimes interspersed with pastes of different colours, and extends fifteen feet and a half in length, by nine and a half in breadth, exclusive of an ornamental border. The whole details of the games of the circus are represented here, from which it appears that no less than eight chariots started at a time: some of the chariots are represented as broken, and the horses and charioteers fallen, as in the mosaic at Seville, for it was a point of address among the ancients to overthrow their competitors in the course. Some of their horses are white, gray, or pale bay, and their figures are elegant and animated. A number of persons, in peculiar costumes, seem to have a share in the games, and those presiding are mostly clothed in blue.

The mosaic pavements discovered in Britain, which was long a Roman province, are so numerous that we cannot afford space to enumerate them. It must suffice to say that the generality of such mosaics represent the circus-games, theatrical scenes, marine deities, tritons, and nereids, together with various ornamental devices.

Not only pavements, but other portions of large buildings also, were decorated in this manner, particularly at later periods than those to which the production of such objects as those just described must be referred. Justinian decorated the church of St. Sophia, at Constantinople, during the sixth century, with mosaic-work, formed partly by doublets, or pieces of glass united horizontally with a coloured foil interposed. Some of the earlier popes decorated the churches of Italy with mosaic, but the art declined there in about the fifth or sixth century, and appears to have been almost totally lost, until Andrea Taffi learned it from a Greek artist, named Apollonius, who was employed on the church of St. Mark, at Venice, in the thirteenth century. From that time the art of working in mosaic became much practised, and many eminent Italians distinguished themselves by their skill therein, among whom were Giotto, Tucca, Mancini, Calandra, Lafranco, Cristofi, Brughi, Calendrelli, and Camussi.

The most curious specimens of mosaic are those which, from the small size of the pieces composing them, enable the artists to produce tolerable representations of pictures, in which all the differently-coloured portions are given by appropriately-coloured pieces of enamel. Many specimens of this kind have been preserved. On the roof of the baptistery of the Church of St. John at Ravenna, the baptism of Jesus Christ is represented in mosaic, ascribed to the fifth century. The ceremony is represented as being performed partly by sprinkling and partly by immersion. A circular compartment in the centre is occupied by Christ standing upright in the river, while John, holding a mis-shapen cross in one hand, pours water from a shell or some vessel on his head. It likewise contains a human figure, inscribed *Jordann*, rising out of the water, which is probably a personification of the sacred river. This compartment is environed by full-length figures of the twelve apostles, and the whole is surrounded by a border, consisting of pulpits, altars, and other sacred emblems.

Rome has been celebrated for the production of mosaic pictures. We are told of a portrait of Pope Paul the Fifth, in which the face alone consists of one million seven hundred thousand pieces, each no larger than a grain of millet! The enamel or other substances prepared for this singular kind of portrait-painting, is tinted of a vast variety of different shades, in order to obtain the required gradations of colour in the picture. The present number of tints in mosaic is said to amount to no less than sixteen or seventeen thousand, proceeding by a nicety of gradation almost inconceivable. About seventy years ago the tints were said to be about five thousand in number, so that a considerable increase has taken place since that time.

There is a large establishment at Rome, belonging to the Pope, where mosaic painting is conducted on a large scale. The different materials are arranged in numerous apartments, from which they are removed by the artists when wanted. Besides this establishment there are many artists at Rome occupied in smaller works, such as pictures; full-length figures, whose dimensions do not exceed two or three inches; birds, insects, and baskets of flowers,—all in miniature, and exquisitely finished. A very elaborate mosaic picture was completed at Milan, about twenty years ago, after Leonardo da Vinci's painting of the Last Supper, preserved in a convent of that city. This mosaic was about 24 feet in length, by 12 in breadth, imbedded in 12 slabs of marble. It was the production of Rafaelli, an artist of the Roman school, by whom eight or ten men were employed on it daily

during eight years. This work, valued at 7500*l.*, was ordered by Bonaparte, whose downfall caused it to remain in the possession of the artist, from whom, however, it was subsequently purchased by the Emperor of Austria. Other specimens of mosaic painting have cost from five to six thousand pounds each. In the church of St. Peter's at Rome are many large specimens, after paintings by Raphael, Guido, Carlo Maratti, Guercino, and other eminent painters.

Caylus and Winkelmann, in the last century, described two curious specimens of mosaic, made of glass, consisting of coloured glass fibres fitted with the utmost exactness, so that a section across the fibres represented the object to be delineated. The fibres, when properly joined together, were cemented by fusion into a solid mass. Of these two specimens, each of which was about an inch long, and one third of an inch broad, one exhibited, on a dark ground of variegated colours, a duck of various lively colours. The outlines were decided and sharp, the colours beautiful and pure, and the effect very striking, from the artist having used in some parts opaque, and in others transparent glass. The most delicate pencil of the miniature painter could not have traced more accurately and distinctly, either the circle of the pupil of the eye, or the apparently scaly feathers on the breast and wings. The other specimen was about the same size, and exhibited an ornamental device of green, white, and yellow colours, which were traced on a blue ground, and represented volutes, beads, and flowers resting on pyramidally-converging lines. On whichever side these specimens were viewed, a similar object was perceived, for the pictures were formed of very slender fibres of glass, laid side by side, according to their colours, and afterwards exposed to a heat just sufficient to fuse the whole into a connected mass, without disturbing or injuring the tints of any one fibre.

Having thus given a brief description of the most remarkable specimens of mosaic, we will in another article describe the operations by which they are produced.

COMMERCIAL TELEGRAPHS AND THE PENNY POSTAGE.

IMPROVEMENTS generate improvements oftentimes in most unexpected directions. It seems almost absurd to say that the reduction of the duty on salt has cheapened literature—it is so, nevertheless. The reduction of this duty led to the manufacture of a very cheap bleaching liquid, which, acting upon coloured rags, rendered them suitable for white paper, the manufacture of which before this discovery was limited to *white* rags. The consequence has been that paper is much cheapened.

A somewhat analogous instance is afforded by the extension of mercantile telegraphs along the chief headlands of the coast, which may be attributed to the existence of the penny postage. The establishment of these telegraphs is a private enterprise, quite unconnected with government, and mainly established for the purposes of rapid communication on subjects connected with mercantile shipping. Great must be the commerce, and deep its interests, to support a system of telegraphs for its own use. Public attention has been recently called to the subject by the completion of a line of telegraphs between London and Dover, being a part of the general system. The system began some years ago, by Lieutenant Watson (of the Royal Navy), who formed a line of telegraphs at the port of Liverpool, and subsequently at Hull, and projected the establishment of telegraphs at the chief headlands along the whole coast. Their advantages in communicating with vessels at sea, and procuring timely assistance in cases where the want of it has led to serious losses of life and property, were felt to be very valuable. But the cost of the necessary correspondence between the telegraphic stations and the central office, with the owners and other parties interested, was found to be so great under the old rate of postage, that the extension of the system to the headlands was abandoned. No sooner, however, did the penny postage loosen the bonds which fettered correspondence, than Lieutenant Watson appears to have commenced the extension of his telegraphs.

The reduction of postage, (he states,) offered such facilities for transmitting intelligence to all parts of the kingdom, that it was determined to extend the system to the principal headlands round the coast. Telegraph stations are now at work at Flamborough Head and the North Foreland; at the Needles, Isle of Wight, to Southampton, whence by the railroad commmunications are received six times a day in London; at Skirra Head, Pentland Firth, Peter Head, Aberdeenshire; and others are in progress from the Start to Dartmouth, and other principal headlands, including the Bristol Channel, the Clyde, and the south-west coast of Ireland. Cutters as floating telegraphs, will be constantly cruising in the Downs, and off the Isle of Wight, for the purpose of communicating with vessels as they pass.

Such telegraphs when established, will enable vessels from every quarter of the globe, to report themselves, or forward intelligence immediately on making the British shores. They may communicate to their owners, consignees, or others interested, in cases of accident or distress; if out of time, or detained by adverse winds; if in want of stores or provisions; the state of foreign markets; notices of arrivals out, &c; and they may frequently save pilotage, port charges, and loss of time, by calling off any of the telegraph stations for orders.

It may not be uninteresting to adduce some instances where the service of these telegraphs has been very apparent.

1st. The ship *Consbrook*, from Bombay, unable to save her tide into Liverpool, came to an anchor off the floating light. She had but one anchor on board: at low water a gale commenced from the westward, and as the flood made, she dragged towards the banks; she could not slip and claw off against wind and tide, nor could she run into port for want of water; she therefore telegraphed as follows:

1545. In want of an anchor and cable.

1531. Weight of anchor, 16 cwt.

These were supplied, and brought the vessel up within 150 yards of that fatal spot, the North Spit Bank. The vessel and cargo were estimated at about 65,000*l.*, and were underwritten in London, Liverpool, and Glasgow.

6th. In a snow storm, a brigantine, 68 tons register, with a cargo on board estimated at about twelve thousand pounds value, having sailed from Hull the previous day, was driven ashore on that dangerous point, the Binks, off Spurn. Early in the morning, the telegraph announced the fact of 'A brigantine being ashore,' but as the vessel had not been provided with the necessary flags for signals, her name could not then be announced. At eleven o'clock, however, some means of communication having been effected between the vessel and the telegraph on board the Humber float, intelligence was instantly forwarded that she was the *Mary*, Captain Lancaster, bound to Dunkirk, which information might have been received several hours earlier had the vessel possessed the signals. On its being communicated to the parties interested, they secured the means of rendering efficient assistance, by sending down a steamer, and hiring lighters, which succeeded in discharging and transhipping this valuable cargo during the night; and thus, in consequence of the rapid intelligence conveyed by the telegraph, placing the cargo in safety *before the time the accident could have been known in Hull through the ordinary means.* Indeed the telegraph may fairly lay claim to the merit of having saved both vessel and cargo, as at the time it was blowing a fresh gale, and a heavy sea running.

There seems but little relationship between a penny post letter and the safety of a ship's cargo of several thousand pounds in value, yet that such is the fact, these telegraphs seem to prove; and we doubt not that as post office improvement becomes more and more developed, beneficial results, not less remarkable, will be traced to its existence.

LONDON:
JOHN WILLIAM PARKER, WEST STRAND.
PUBLISHED IN WEEKLY NUMBERS, PRICE ONE PENNY, AND IN MONTHLY PARTS, PRICE SIXPENCE.
Sold by all Booksellers and Newsvenders in the Kingdom.

THE

Saturday Magazine.

No. 611. JANUARY 8TH, 1842. { PRICE ONE PENNY.

ICELANDIC SKETCHES.

THE TREHYRNING, OR THREE-HORNED MOUNTAIN.

1. Geographical Sketch.

We are accustomed to invest the arctic regions with the terrors of perpetual winter, and to suppose that the character of the inhabitants necessarily partakes of the sternness of their climate. But amid those tracts of snow and mountains of ice, all is not desolation: a closer inspection reveals softer features, and proves that even there a kind overruling Providence has assigned to the animal and the vegetable kingdoms their periods of enjoyment and fertility; and has enabled man not only to endure the clime, but to share in its peculiar enjoyments and greatly to mitigate its terrors.

The land to which we are about to invite attention, presents some of the wildest and grandest phenomena of nature together with gentler scenes which become more beautiful by contrast. The inhabitants, too, present some of the gloomy characters of their country, relieved by many of those Christian virtues which happily spring up to adorn and to bless every region of the earth where true religion is known. Even in a country which we might be apt to fear was doomed to a spiritual darkness commensurate with its natural gloom, numbers are encouraged through the merits of a redeeming Saviour, to look forward to a brighter home than the most favoured spot in this world can afford.

Iceland is a large island situated in the North Atlantic Ocean, between 13° 20′ and 24° 31′ of west longitude, and between 63° 23′ and 66° 33′ of north latitude. Its most northern point scarcely touches the arctic circle, whilst the North Cape, usually placed in maps to the north of this line, does not touch it. Its shape resembles somewhat that of a heart, the point of which is towards the south. Its area is estimated at 38,320 square miles, but only about a ninth part is inhabited, the rest being occupied with naked mountains of ice, or by lava and volcanic ashes and sand.

The aspect of Iceland is most repulsive. Its dark and rugged coasts frequently present lofty precipices which repel the advances of the ocean; but where the rocks are rent asunder, long narrow fiords, or inlets of the sea, are formed, in whose calm waters a safe retreat from a stormy ocean is often afforded to the mariner. The western coast is deeply indented with these fiords. The southern coast alone is flat and sandy; but here occur numerous shoals, quicksands and breakers, which expose the fishermen to danger, and often render it impossible to land in safety. Many parts of the shore are occupied by long banks of sand, some of which are nearly two miles broad, and in other places numerous rocks defend it from the action of the waves.

As the traveller approaches Iceland, his attention is arrested, long before the coast is seen, by certain white specks in the horizon: these are the Jökuls, or snowy mountains. Sneefeld, one of these, is seen from a distance of 140 miles, and Sniofell from 100 miles. On a nearer approach, these mountains present themselves to the eye as colossal piles of perennial snow, and when reflecting the beams of a bright sun they shine forth with dazzling lustre, and tinge the atmosphere with a golden hue. The production of these jökuls is similar to that of the glaciers of the Alps and Pyrenees, but the low temperature and abundant moisture of Iceland, are more favourable to their increase. The rounded forms of the trachyte mountains allow vast quantities of snow to rest on their tops and sides. The summer's sun

melts the outer portion, and the water thus formed sinks far below the surface, where it is immediately converted into ice. Fogs and mists are attracted towards these mountains, and, condensed upon their summits, increase and consolidate the mass. Its smooth shining surface reflects the rays of the sun, so that but little heat is absorbed, and if during the day a portion of the snow is dissolved, it freezes again at night. One consequence of this alternate thawing and freezing is the production of *rotten* ice, which not offering sufficient resistance to the accumulating snows of many winters, the whole mass slides down into the valley and lays waste the narrow fields and scanty pastures of the natives. It is related that the Icelander who has returned after years of absence in a foreign land to end his days in the home of his childhood, may find it transformed into a desolate wilderness of ice. The volcanic fires which lurk within many of these jökuls also hasten the castastrophe by destroying the slight hold the ice has on the mountain, and, converting the under stratum into water, float the whole mass down into the valley. In this way seems to have been formed the Breidamark Jökul, which is now twenty miles long by fifteen broad, and four hundred feet high. It occupies a wide plain encompassed by hills, which several centuries ago was a beautiful vale adorned grass-fields, woods, and farms. Most of these ice-mountains occur in chains extending across the island, and exert a powerful influence both on its civil and physical character. The Klofa Jökuls are said to cover a space of 3000 square miles, and to be still encroaching on the land which separates them from the coast. It is even feared that the present narrow and dangerous path, which forms the only road between East and South Iceland will soon be obliterated. The chain is prolonged towards the west by a continuous plateau of ice, and terminates near the coast with the Oester Jökul. Many of the summits of this range greatly exceed 5000 feet in elevation, and form conspicuous land-marks to travellers approaching Iceland from the south at a distance of nearly one hundred miles. Other mountain chains of this description occur in various parts of the island, and stamp it with the character of barren desolation. Most of these rocky masses are of volcanic origin, as has often been fearfully proved by the concealed fire bursting forth with fury through the icy covering which concealed its terrors.

The snowy chains of Jökuls inclose the great desert of Iceland, "whose unknown regions form the scene of many superstitious terrors to the natives; and indeed, the lonely and desolate aspect of this district can scarcely be exceeded by any other region on the earth. Age after age, volcano on volcano have poured their stony floods over its surface, till it has become almost one black scarified field. Immense masses torn from the neighbouring mountains, and wide chasms, everywhere interrupt the progress of the traveller, whilst the magnetic influence of the rocks renders the compass useless as a guide. Long tracts of volcanic sand, interspersed with huge insulated fragments of lava, can scarcely be said to diversify the scene. In these wastes no springs of water refresh the traveller, who, as in the deserts of Arabia, must carry a supply along with him. No bird, no beast, scarcely even a plant or humble moss relieves the tedium of the journey, or expels the feeling of loneliness that weighs upon his spirit. Where the internal fires have been most active, hills are tossed on hills in inextricable confusion, of which even the tempestuous ocean furnishes but a faint image. In other quarters magnificent glaciers of green transparent ice occur, whilst the volcanic scoriæ with which they are often mixed, exhibit a strange contrast, though one strikingly characteristic of this land, where fire and ice seem ever conjoined, and, yet ever contending for the mastery*."

* From a skilfully compiled article on Iceland, contained in a recent volume of the *Edinburgh Cabinet Library*.

Of the numerous volcanic cones of this island, that of Hekla is most familiar, on account of its position near the most frequented part of the island and in sight of vessels sailing to Greenland and North America; as also the frequency of its eruptions and the ease with which it can be approached. Its height has been computed at 5110 feet, and its circumference at the base between fifteen and twenty miles. It stands alone in the midst of a valley, and is about thirty miles from the southern coast. It consists chiefly of lava and scoriæ mixed with ashes, pumice, and partially fused stones emitted by the fiery streams of numerous eruptions. It is divided near the top into three peaks, in the sides of which craters are formed. Mackenzie, in 1810, found steam issuing from the central peak, and the heat to be so great that on removing some of the exterior stones, those below were too hot to be handled. Its sides are marked by numerous ravines which discharge the winter cataracts, and seem to have been occasioned either by molten lava, or by the torrents of water or melted snow which often accompany an eruption. The fertile plain which once surrounded this volcano is now buried beneath the desolating streams which it has from time to time poured forth: for nearly ten miles around no vegetation is to be seen, but only the ruined walls of numerous farm-houses which tell a mournful tale of peace and prosperity for ever departed.

Although Hekla is better known than most of the other Icelandic mountains, yet it is said to be by no means equal in picturesque appearance to the Trehyrning or Three-Horned Mountain, situated near it, and represented in our frontispiece, from a sketch by M. Gaimard. The height of this mountain is only 2860 feet.

In some of the plains surrounding Krabla, and other burning mountains in the north of the island, and sometimes on the mountains themselves, are many fens containing boiling pits of sulphur and mud. Olafsen describes one which had the form of a huge kettle filled to within thirty feet of the brim with viscid bluish water, visible only when the wind wafted aside the dense vapour that ascended from the surface, and threw an acid mud on the banks. Another of these strange caldrons, described by Henderson, was about 700 feet below the summit of the mountain. Its circumference measured about 300 feet, and it contained a mixture of water, sulphur, and bluish-black mud, in a state of constant ebullition, and every few minutes casting up a jet from the centre. This rose at first to a height of about twelve feet, increasing by jerks to thirty feet, when it quickly declined, and was succeeded by a smaller jet from another part of the pool. The sides, composed of red earth and sulphur, were so soft that it was dangerous to approach the margin. This traveller speaks of the horrors of this pool as being absolutely indescribable; and says that the awful impression they left upon his mind can never be erased. Sometimes a narrow tract covered with grass, has tempted man to take up his abode near the scene of these terrible operations: the internal fires growing fiercer and fiercer, the contents of the caldrons have boiled over, and consumed and corroded every green thing they touched.

If during their periods of repose the numerous volcanic mountains of Iceland are objects of high interest to the traveller, how intensely painful does that interest become when they are aroused from the torpor perhaps of centuries, and discharge their magnificent artillery over the devoted land around them. We have numerous records of these eruptions, every one of which is a tale of terror; but our space will not allow us to do more than refer briefly to the eruption of the Skaptar Jökul, in 1783*.

The winter preceding this year had been unusually mild, but nothing seemed to foretell approaching danger,

* A detailed account of this, as well as several other eruptions, will be found in the volume already named.

till towards the end of May, when a light bluish fog was seen floating along the ground, succeeded in the early part of June by earthquakes, which increased daily in violence till the 8th of that month. At nine on the morning of that day, numerous pillars of smoke were seen rising in the hill-country towards the north, which, gradually gathering into a dark mass, obscured the air, and proceeding southerly, against the wind, involved the district of Sida in darkness, showering sand and ashes to the thickness of an inch. This cloud continued to increase till the 10th, when fire-spouts were observed in the mountains accompanied by earthquakes. Next day the large river Skaptaa totally disappeared. On the 12th, a huge current of lava burst from one side of the volcano, and rushed with a loud crashing noise down the channel of the river, which it not only filled, but overflowed, though in many places from 400 to 600 feet deep, and 200 broad. The devastating progress of the fiery stream over the low country was, for a few days, intercepted by a lake, but the basin was at length filled, and the burning flood proceeded onwards in two directions: one to the east, where its progress was for a short time interrupted by the Skalafiall, up which, however, the stream forced its way, rolling the mossy covering of the mountain before it like a large piece of cloth. The other current proceeded southward, passing over some old lava which again began to burn. Rivers were made to boil, and these destroyed many spots which the fire had spared. Here the liquid matter continued to flow till the 20th of July, and, following chiefly the course of the Skaptaa, it at length poured over the lofty cataract of Stapafoss, and filled up the enormous cavity below. During the whole of this eruption the air was filled with noxious vapours, or darkened with clouds of ashes, by which the sun was either concealed from the miserable inhabitants, or appeared like a blood-red globe which increased their terror and dismay.

The fury of this volcanic storm had been so long confined to the Skaptaa, that the inhabitants of the eastern district on the Hverfisflist, though greatly incommoded by showers of ashes, hoped to escape its more immediate visitations. But on the 28th of June a cloud of sand and smoke caused so thick a darkness that objects within doors could not be distinguished; whilst red-hot stones and dust burned up the pastures, poisoned the waters, and threatened to set fire to the dwellings. On the 3rd of August, a thick vapour arose from the Hverfisflist, its waters entirely disappeared, and on the 9th a foaming fire-stream rushed furiously down its bed, overflowing the country in one night to the extent of more than four miles. The eruptions continued till the end of August, when the whole catastrophe closed with a violent earthquake.

The destructive effects of this volcano were not confined to its immediate vicinity: vast quantities of sand and ashes were scattered over the remoter parts of the island, and some were conveyed to the Faroe Islands, a distance of nearly 300 miles. The noxious vapours that for many months infected the air were equally pernicious to man and beast, and covered the whole island with a dense fog, which obscured the sun, and was perceptible even in England and Holland. The steam rising from the crater, or exhaled from the boiling waters, was condensed in the cooler regions of the atmosphere, and descended in floods that deluged the fields and consolidated the ashes into a thick black crust. A fall of snow in the middle of June, and frequent showers of hailstones of unusual magnitude, accompanied with tremendous thunder-storms, tearing up huge fragments of rock, and rolling them down into the plains, completed the scene of desolation. The grass and other plants withered, and became so brittle that the weight of a man's foot reduced them to powder; and even where the pastures seemed to have recovered, the cattle refused to touch them, dying of actual starvation in the midst of most luxuriant herbage. Small unknown insects covered many of the fields, whilst other portions of the soil, formerly the most fertile, were changed by the ashes into marshy wastes, overgrown with moss and equiseta. A disease, resembling scurvy in its most malignant type, attacked both men and cattle, occasioned in the former, no doubt, by the scarcity of food, and the miserable, often disgusting, nature of that which alone they could obtain. Many ate of the bodies of those animals which had perished from hunger or disease, whilst others had recourse to boiled skins, or substances still more nauseous and unwholesome. The numerous earthquakes, with the ashes and other matter thrown into the sea, caused the fish to desert many parts of the coast, whilst the fishermen seldom daring to leave the land, enveloped in thick clouds during most of the summer, were thus deprived of their usual stock of winter provisions. This frightful catalogue of evils occasioned the loss of 1500 human beings, 19,488 horses, 6801 horned cattle, and 129,937 sheep. This is the most moderate calculation. Stephenson, who wrote an account of the eruption, gives much higher numbers, which however are thought to be exaggerated.

ANAMORPHOSES.

Among those optical phenomena which are calculated to deceive, when considered by the aid of the eye only, there is one of a very curious kind called *Anamorphosis*, a term derived from two Greek words signify a distortion of figure. The phenomenon consists in this, that a distorted and grotesque figure, out of all regular proportion when viewed in a customary way, shall become symmetrical and regular when viewed from a particular point. We shall select one example, and illustrate by its means how such optical puzzles may be produced geometrically.

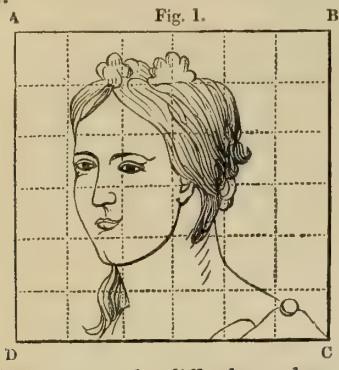
Take any subject at pleasure, say a portrait of a female head, as in fig. 1, and of small size. Divide it vertically and horizontally with parallel lines, of which the outer shall all form the boundary A B C D, and the whole shall be equidistant. Then, on a separate piece of paper or cardboard, prepare a drawing similar to fig. 2, by the following means. Draw a horizontal line *a b*, equal to A B, and divide it into as many equal parts as the latter is divided. Let fall a perpendicular line *e v*, from the middle of *a b*, and then draw *s v* parallel to *a b*. Both *e v* and *s v* may be any length at pleasure; but the longer the first is, and the shorter the other, so will the anamorphosis be more and more deformed; the proportions in our figures are sufficiently different.

After having drawn from the point *v*, right lines *v* 1, *v* 2, *v* 3, *v* 4, to the divisions of *a b*, draw the line *s b*, and through each point where *s b* intersects the divergent lines, draw other horizontal lines paralled to *a b*. We shall thus have a *trapezium*, *a b c d*, divided into as many cells as the square in fig. 1. The next step is, to fill up all the cells of fig. 2, with portions of the device proportionate to their position in fig. 1. For instance, in fig. 1, the nose is in the second vertical division from the left, and in the third and fourth horizontal divisions from the top; and that portion of the face must accordingly be placed in a corresponding part of fig. 2. But it will obviously be necessary to introduce great distortion of figure; and the more numerous the divisions, both horizontal and vertical, the more readily will this be effected. The easiest way is, to make the points of intersection, of the horizontal and vertical lines, fall on corresponding parts of the face in the figures; after which the other portions can be filled in.

By these means we procure the anamorphosis seen in fig. 2, which, when viewed from a particular position, will lose all its distortion, and assume an appearance resembling that in fig. 1. This position lies immediately over the point *v*, and at a height above it equal to the

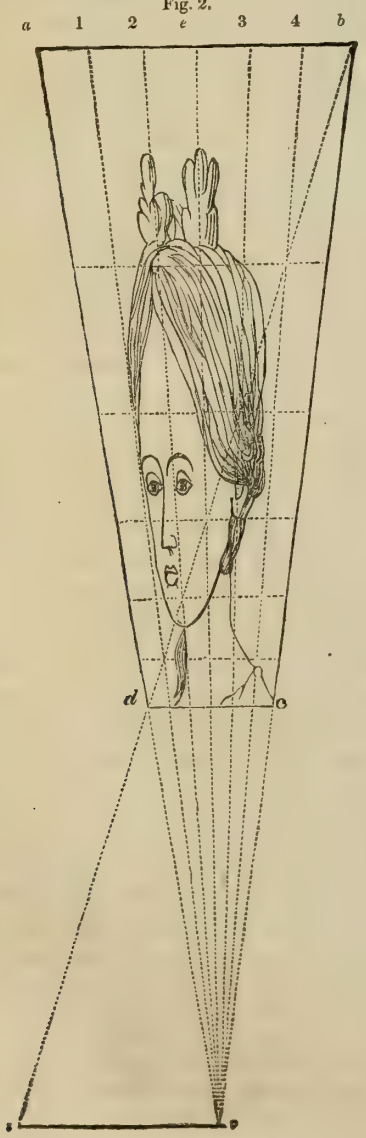
length of the line *s v*; and the means of determining it are as follow. Place the drawing horizontally before a window; take a slip of card, and rest its lower edge on the line *s v*, the card being accurately vertical; pierce a small hole in the card vertically over the point *v*, and at a height from it equal to the length of the line *s v*; then, with the eye placed immediately behind the card, look through the orifice at the anamorphosis. It will be found that, as soon as the eye has become accustomed to the novelty of the experiment, the anamorphorsis will lose its distortion, and appear almost exactly like the symmetrical figure.

Fig. 1.



It would be extremely difficult, and would require geometrical reasoning of a lengthened kind, to shew *why* this particular form of construction should lead to such and such results. Perhaps the idea may better be caught by selecting a *mechanical* form of trying the experiment, a form, indeed, which may in many cases be the most easy to a young experimentalist. Having selected a design on paper, pierce it by means of a needle or pin with a number of small holes, at the principal points of its circumference and interior details. Then, holding this drawing in a vertical position over a flat sheet of paper and placing a candle at a short distance behind it, the rays of light which pass through the holes will fall upon the surface which is to receive the anamorphosis, and will there mark certain points of the device, which may be afterwards filled up by the pencil. Then, the eye being placed at the point previously occupied by the flame of the candle, we shall see this figure under a very regular form, although it would appear grotesque and misshapen to an eye placed anywhere else.

Fig. 2.



This last-mentioned mode of performing the experiment is very instructive, in reference to the cause of the deception. We have supposed the design to be vertical, the anamorphosis horizontal, and both to be formed of plane flat surfaces. The candle, too, we have supposed to be placed near the design, and elevated a little above it. But all these conditions may be varied *ad libitum*. The design may be either vertical or inclined; the paper on which the anamorphosis is to be formed may be either horizontal or inclined; the surface of the paper may be either plane or curved; the candle may be more or less elevated above the design, and more or less distant from it. All these variations in the conditions of the experiment produce variations in the appearance of the anamorphosis; and yet all suffice to give to the anamorphosis a regular form, when the eye is placed in the position previously occupied by the flame of the candle. This is in fact the distinguishing principle of the experiment.

In general, such subjects are chosen, and the degree of distortion is such, as will produce a figure utterly unintelligible when seen in the common way by a person unused to the experiment. Some artists have even succeeded in giving to the anamorphosis an appearance of an image which becomes changed into another totally different when seen from a particular point of view. Thus Niceron made a drawing which, when viewed in the customary manner, represented a rural landscape; but when viewed from a particular point of sight, it totally changed its character, and gave a representation of two men upon the walls of a cloister.

There is a kind of anamorphosis sometimes found at the opticians, which, though nothing more than a toy, is very curious in reference to our present subject. A conical mirror is placed upon its base on a sheet of paper, which is marked with certain confused lines. When the eye is placed in one definite spot, and views this design as reflected in the surface of the mirror, the confused lines become combined or congregated so as to form a regular figure. The construction of such an anamorphosis is a very ingenious application of the optical law, that in reflected light the "angle of incidence is equal to the angle of reflexion;" and although we cannot here follow out the method to its minute details, we may offer a few explanations. In the first place, a design is prepared on a piece of paper, and is inclosed in a circular boundary. The circle is then divided into equal segments by radii proceeding from the centre to the circumference; and these segments are further divided by concentric circles, drawn equidistant one within another. The surface of the design is thus divided into several curved portions; and the more numerous these portions are, the more correctly can the anamorphosis be made. This design, thus divided, forms the pattern from which the drawing of the anamorphosis is to be effected; but before this can be done, a sheet of paper must be marked with lines in a peculiar manner. This is an intricate part of the business; for the object is, to arrange

circles and lines in such a manner, that when a conical mirror is placed on the paper, and the eye placed above it, in the prolongation of the axis, the reflexion of all these lines shall together form a figure similar to that of the circles and radii of the original design. A great many circumstances have to be taken into account here; such as the diameter of the cone; the proportion between its diameter and its height; the obliquity of its sides; the height of the eye above the apex. All these matters are to be expressed geometrically on paper, and the requisite lines and circles deduced from them. The anamorphosis, or rather the chart on which it is to be formed, consists of concentric circles and radii, as in the original pattern, though of different proportions; and the experimenter then proceeds to work in the design. This is a task of some difficulty; for that portion of the device which was represented in the centre of the pattern, must be placed at the outer circumference of the anamorphosis: while the exterior portions of the device in the pattern are copied in or rather near the central part of the anamorphosis. A space is left in the middle, on which the base of the conical mirror is to be placed; and the eye being then held in a given position above the apex of the cone, sees a regular and symmetrical figure reflected from the surface of the mirror. In order to prevent the eye from wandering to an unsuitable position, it is desirable to view the mirror through a perforated card, held horizontally at the proper distance above the apex of the cone.

These optical illusions greatly surprise those who are not familiar with their nature and causes, on account of the want of resemblance between the anamorphosis, and the figure represented. A still more remarkable effect is produced when the mirror is *pyramidal* instead of *conical*, for in that case only a portion of the device drawn on the sheet of paper can be reflected to an eye above the apex. All those rays which fall on the angles of the pyramid, or on any of the sides in other than vertical planes, are not reflected to the eye, and do not form part of the compounded image. Consequently, we may fill up these portions of the sheet of paper with any grotesque device we please, provided correct drawing be bestowed on those parts which are reflected to the eye, and the anamorphosis is then such as to baffle all the speculations of an uninitiated spectator.

In these optical illusions, if the devices be coloured, as they ought to be to produce the most striking effect, some tact is required in proportioning the depth of tint, so that the reflected tints, whether coming from a near or a remote part of the drawing, may have a due intensity.

THE BRANDY PEST,

A TALE; TRANSLATED FROM THE GERMAN OF HENRY ZSCHOKKE, BY L. GANTNER.

The following tale is from the pen of a writer who has devoted his whole life to the welfare of his fellow creatures. Henry Zschokke is not only acknowledged as one of the most distinguished novelists and historians of Germany, but also as one of her most active statesmen and philanthropists. Almost all his writings tend to improve the moral condition of the people. He thinks it not degrading to address even the lowest classes, in that simple and unaffected style, which alone can speak to their hearts and awaken in them those higher mental feelings, which but too commonly are kept down by their miserable condition. Even in his most classical works, such as his famous *History of Switzerland*, which has been translated into several languages, he keeps *the people* constantly in view. Possessing not only a high reputation as a classical writer, but also great power as a statesman, he stands in a position in which his Christian philanthropy finds full scope for activity. Watching for half a century the evils that have crept upon society, he could not but see that their main source was drunkenness. In vain had he endeavoured to improve the moral character of the Swiss, which has been of late much degraded through the increasing intercourse with foreigners, by holding before them the high examples of their sober, brave, and virtuous forefathers, or by showing, as he had done in a popular little work called *The Village of the Gold-makers*, (translated some years ago into English,) how to obtain real prosperity. But his efforts were of no avail with a people stupefied by the immoderate use of ardent spirits. He resolved therefore to attack the main evil, and after having carefully considered the attempts that have been made in England and America, for rescuing the unfortunate victims of drunkenness from ruin, he wrote the *Brandy Pest*, and had it distributed widely among the poor, with a view not only of opening the eyes of the blind and ignorant, but also of stimulating all good Christians to assist in the eradication of a wide-spread disease.

The tale produced the intended effect. The sensation it created was extraordinary. The advice given in it was widely adopted; and Zschokke has been amply rewarded by witnessing the gradual moral improvement of thousands, arising from the formation of temperance societies, and the zealous assistance of many clergymen, magistrates, and other benevolent men.

Although in this country much has been done to eradicate the the evil of drunkenness, yet the following little tale will be found neither superfluous nor unworthy of the attention of all classes, as it is intended "to instruct and warn the rich and the poor, the old and the young," of this country as well as of that for which it is especially written. The character, talents, rank, and almost European name of its author, as well as the circumstance of its being entirely free from party spirit, will doubtless justify the present translation.

With regard to the title, it must be borne in mind that in Switzerland *brandy* is the cheapest spirit, and consequently that liquor of which there is the greatest consumption. It is in fact the *gin* of the Swiss. The corresponding English title of the little book would therefore be, The Gin Pest. But having no wish to alter anything in the locality of the tale, nor to modify it so as to represent the state of drunkenness in this country, the translator has kept strictly to the subject-matter of the original, and retained even the peculiarly simple construction of the sentences; preserving thus a true and faithful picture of a Swiss story as related by Henry Zschokke.

The translation of this tale is certainly little calculated to display the great skill and talent which Zschokke possesses as one of Germany's best novel-writers, and to induce the English to make themselves more acquainted with his works; but if the author of *Waverley* is not less great because he wrote the *Tales of a Grandfather*, Zschokke's reputation may not be injured by his *Brandy Pest* and *Village of the Gold-makers;* works which he wrote, not to increase his fame as a novelist, but to contribute to the happiness of mankind.

The Fellow Traveller.

On my journey homeward from England, I made the acquaintance of a gentleman whom I met with at an inn. He was handsome in his personal appearance, and refined in his manners, but he was evidently depressed in spirits, and he spoke but little. When, however, he learned that I was a native of Switzerland, he took me warmly by the hand, called me his fellow-countryman, and offered me a seat in his carriage for the remainder of the journey. I accepted his offer with pleasure.

He informed me that his name was Fridolin Walter, and that he was a physician. He had, during the last four years, been travelling with a rich nobleman through the greater part of Europe, and the good lord had conferred on him a handsome pension for life, in acknowledgment of his skill and attention during an alarming illness in a foreign country, to which under Providence his lordship attributed not only his own but his daughter's recovery. "As you succeeded so well in these cases, doctor," said I, "you can perhaps give me some good advice, for I suffer dreadfully from indigestion and violent pains in the stomach." Looking at me firmly for a while, as if he would pierce me through with his black eyes, he said drily, "You may become much worse, friend." "You alarm me," I exclaimed; "I know not the cause of my complaint."

"But I have discovered it," he answered, "during the few days that we have travelled together. The spirits which you take are the cause of it, although you do not drink what you call much; that is to say, you take in the morning before breakfast a glass of rum, after dinner a glass of cherry-brandy with your coffee, and in the evening another for your sleeping-draught."

"Oh, you are joking, doctor," replied I; "a glass of good spirits, now and then, can do me no harm, for I am accustomed to live simply. It gives me ease, strengthens and warms my stomach, excites my spirits, and everything goes on ten times better, after I have taken it. I declare to you, the whole earth looks much merrier after a moderate dram than before."

"You are quite right," answered the doctor, "such are always the *first* effects of spirits, and that is why people are so fond of dram-drinking; the *second* effect, however, is not so good. It makes you afterwards sleepy, weak, and nervous;

it decomposes the blood; the body becomes more susceptible of fever and epidemic diseases; and when you have any slight attack even of cold, you are exposed to greater dangers than persons who never take inflammatory beverages."

"Oh, oh, doctor! you must not exaggerate," said I; "what you have stated may be the case with drunkards."

"I do not exaggerate, friend," replied he, "it *is* already your case. May it in mercy happen, that the cholera come not near you, for you would in all probability fall a victim to it. In London seven-eighths of the cholera patients died, all of whom,—in the higher as well as in the lower classes,—were in the habit of drinking intoxicating liquors. You may be sure, for experience has proved it, that out of ten young men who, from their twentieth to their thirtieth year, drank every day no more than one or two glasses of spirits, more than half died at the end of ten years, and the others impaired their health before the expiration of that time."

"But, dear doctor," said I, "there are not only drinkers, but even drunkards, who become old and gray, in spite of their drinking."

"True," replied the impenetrable doctor, "but how often do we see those old transgressors, who have lost not only their best bodily strength, but also their intellectual powers. Observe their confused, staring look, and the trembling of their hands! Such persons may form an exception from those who die early, but no exception from the consequences of their vice. Their children, even, pay the penalty from which the drunken father perhaps escapes. Observe the drunkard's children! They are weak, pale, and paralytic; they are affected with glandular swellings, and have other bodily infirmities. They imitate their fathers in brandy-drinking, and die even on the very verge of manhood.

"Yes, yes," said I, "you are certainly right, I know such persons; but you must distinguish between *use* and *abuse*."

"Certainly, friend," answered he; "the use of spirits is more frequent than what you are pleased to call the abuse; nevertheless, both exercise their noxious effect on the human body, as you may observe already with yourself. *Brandy is poison under any circumstances!* Remember that! It is no beverage for quenching, but, on the contrary, increases thirst. It affords no nourishment, for it possesses no nutritious qualities; but, on the contrary, it weakens the stomach. Therefore, brandy, which is of no use for preserving health, always undermines it. The faces even of the brandy-drinkers betray their habit. Those of the lower classes, who drink nothing but brandy made from corn, potatoes, or rice, have a pale, disagreeable, weak countenance. Wealthier persons, who use cherry brandy, French brandy, foreign liquors, strong wines, and spirits, have a reddish, swollen, copper-coloured face. God marks the sinners!"

"Doctor," said I, "you put me in pain. I think it is only the *abuse* of wine and spirits which is hurtful."

"Sir," exclaimed the doctor, "*alcohol* is a slow poison, whatever may be the disguise in which it is conveyed into the system. With one or two glasses of pure alcohol one may kill a healthy man, who has never tasted spirits in his life. Mixed with other ingredients, the alcohol produces diseases in the body. Wine and beer, drunk moderately, are less hurtful than brandy, because they contain less alcohol. In a hundred gallons of beer there are only one or two gallons of alcohol; in a hundred gallons of the common fruit-wines, there are from four to eight gallons of alcohol; in good French wines, from ten to nineteen; in Spanish and Portuguese, from nineteen to twenty-five; in brandy, cherry-brandy, and rum, there are from twenty-four to fifty-three gallons of alcohol! Such is the difference."

"You really believe then, doctor, the alcohol to be the mischievous thing, the poison? But is it not used as a medicine?"

"Certainly; and so are mineral poisons; they are used as *medicines*, but not as *nourishment*, not for daily use. Alcohol is, and remains poison, like mercury; and is repelled and rejected from all the interior parts, which it affects like mercury."

"Don't tell me of alcohol and mercury," exclaimed I; "what do you advise me to do for my health? I must drink something; will you prescribe something for me."

"Nothing," said the unmerciful doctor; "you may drink wine and beer in moderation, but good pure water will be better for you. In order to establish your health, take every morning before breakfast two glasses of fresh water, and as much in the evening before you go to bed, and do this every day. Drink no spirits; whatever be their name, all are artificial, not natural drinks. I promise you, friend, in six months, you will have again a healthy stomach, and you will feel the best effects arise from this habit. I entreat you to follow my advice. Our ancestors were stronger people than we are; they did not drink brandy, for they were not acquainted with it. In the apothecary's shop it was found under the name of *aqua vitæ*, that is, *water of life*. It was used as a cordial. The savages in America call it *mad water*, and the savages are right!"

I paid attention to what Doctor Walter truly said; and for the encouragement of all the thousands who complain of diseases like mine, I add, that from that day I followed the doctor's advice, took every morning and every evening two glasses of fresh water, and only at dinner a little beer or wine. In six months' time I felt, to my great delight, the good effect of this upon my health; have since banished spirits from my house, and entirely avoided them, and during the three years following wanted no doctor.

Two Sad Letters.

FRIDOLIN and I became daily more familiar with each other on our journey. He was a very good-hearted fellow. His sadness, however, remained unchanged; nothing could remove it, though he appeared to me too virtuous to be the victim of a guilty conscience. With the wealth he had acquired, in the fulness of health and the freshness of life, what could weigh so heavily upon his heart? No doubt, thought I, as I had already learned that he was unmarried, he has met with some disappointment in love in England.

One day, as we sat together in the carriage, and traversed a very beautiful country, I reproached him in a friendly manner for his melancholy. "You ought to be the happiest man beneath the sun," said I; "open your heart to me, perhaps I may in turn become your physician."

"That you never will," answered he, with a suppressed sigh. "I am unhappy! nobody can cure me. But I can make you acquainted with the cause of my grief. Perhaps it will relieve me, at least, to speak of misfortunes to a sympathizing friend. There, read for yourself the circumstances that call me home so quickly." He took out a pocket-book and gave me two papers from it. One of them was a letter from his mother, in the following words:

"When you receive this letter, my dear Fridolin, you will know that I am a bereaved widow. Come back, dear son, to be the support of your unhappy mother. Your father is no more. A fit of apoplexy has snatched him away from this earth. He had been attacked previously, in the autumn of last year, but I did not write to you anything about it, lest you might be in anxiety. In vain the physician recommended to him moderation in drinking. Unfortunately he had addicted himself too much to the drinking of wine and spirits. It became his and our bane. But God's will be done! I have had great domestic troubles these two years, for I have seen how our fortune has been diminishing more and more. Our small property is deeply mortgaged; probably nothing can be saved except my dowry. I fear our house must be sold. Therefore, come back immediately; you are my only consolation.

"Prepare yourself for another hard stroke of fate. A dreadful event took place six weeks ago in the house of our neighbour Thaly—more dreadful even than our own misfortune. Thaly is no more. His daughter Justine, whom you loved so much, has disappeared; nobody knows whither she has gone. All inquiries have been fruitless. Old Thaly has acted shamefully; he has deceived many people—ourselves among the number. His property is not sufficient to pay his debts. I pity the poor girl. Dear Fridolin, come immediately; leave everything in order to comfort

"Your much afflicted MOTHER."

The other letter was also written in a female hand, but without date and place. The contents of it were as follow:

"Be not frightened, my ever-beloved Fridolin, if I tell you, that this is the last letter you will receive from me. It is true, I am still attached to you with all my heart, but I can never be your bride, though it will break my heart to lose you. I am glad that your parents opposed our union, for I have experienced the most horrible blow that can be conceived: I cannot write it to you. You will learn it but too soon. Forget me! I discharge you from all your promises. I shall return into the hand of your mother the ring you gave me. Give it to some happier being who is more worthy of you. I live and suffer, far from your and my home. Brought up in wealth, I am now a servant.

For me the world has no more joy—all is gloom and death for me.

"Farewell, dear, beloved Fridolin! forget me! I have now accomplished the most difficult thing, I have now bid you farewell for ever and ever. Do forget me! Do not inquire for my residence. I have a great desire to die; perhaps death may soon relieve me. Farewell! Farewell!

JUSTINE."

An Unhappy Man.

WHEN I had read these letters, I was for a long time in great emotion. I felt deeply that two such communications were sufficient to drive to madness a young man who had a heart like that of my friend. Now I understood his horror of strong liquors; they had killed his father, and ruined a great part of his fortune. The letter of Justine Thaly, however, made the greatest impression on me; it indicated a terrible secret, which the unhappy creature had not even the courage to avow.

"Poor Fridolin!" said I, as I pressed his hand, "I can give you no consolation in this matter. Only time and religion can heal such a wound."

He wiped the tears from his eyes, pressed my hand convulsively, and exclaimed, "Oh! I am made miserable for many years, perhaps for ever! The sudden death of my father, the debts he has left behind him,—hard as all this is, I could bear it with manly courage. Death is the common lot of all men: nobody is immortal here below. The ruin of our fortune would not be a lasting grief for my mother. She does not know that the liberal gratitude of my noble patron will relieve her from all cares for our support. But my poor mother! She writes that she has had domestic troubles during several years. Sad forebodings torment me. Who occasioned these troubles to the good, gentle woman? Alas! and the unhappy Justine! What has become of her? Why was she obliged to leave her home? Why does she renounce me?"

Here he paused and sobbed violently. "Friend," said I, "either she is innocent of the unlucky affair, or——"

"Hush! no *or*," cried Fridolin. "She *is innocent*, she is matchless. I have known her from my earliest childhood. We were neighbours, inseparable play-fellows. When I returned from the university, we promised each other fidelity and love, although our fathers were always quarrelling and going to law, and threatened our union with their malediction. Trusting that time might make a favourable change, and placing our hopes upon a kind Providence, I accepted the nobleman's offer to accompany him for some years in his travels: and now that no obstacles forbid our union, now, for some causes yet unknown to me, she renounces me! In the letter I received from her a few weeks before this last terrible one, she entreated me still, with tender solicitation, to return soon to my home. She was always virtuous, faithful, full of courage and resolution, and now she sinks under her misfortunes. Why does she conceal from me the dark secret, which severs us for ever? she never before concealed anything from me. Oh! what has become of the poor girl!"

He spoke in this strain for a long time. I could not restrain my tears while listening to him. The contents of Justine's letter were so mysterious and ambiguous, that all our conjectures were fruitless.

An unexpected accident interrupted our conversation.

ON ROPES AND ROPE-MAKING.

I.

THE NATURE AND CULTIVATION OF HEMP.

AMONG the many useful forms which fibrous substances may be made to assume, few are more important than that of *cordage*. By this term we imply all the various kinds of rope, string, line, twine, cord, &c., with which every one is so familiar.

The art of twisting into line and ropes various materials, such as thongs of animal hide, the hair of animals, tough grasses, and vegetable fibres, is of remote antiquity, and has existed even among the rudest people. The *tarabita*, or rope-bridge of the Peruvians, and the lasso of the Chilian hunter, are formed by twisting together thongs of ox-hide. In our own country, at the present time, ropes for particular purposes are made of horse-hair. The coir ropes of Ceylon and the Maldive Islands are made from the fibrous husk of the cocoa-nut; the Manilla rope from the fibres of a species of the wild banana; ropes used by other Eastern nations are made from the fibres of the *Crotolaria juncea*. But of all the various kinds of vegetable fibre employed for this purpose, none are so important as the *Cannabis sativa*, or cultivated *hemp*, and the *Linum usitatissimum*, or flax. We shall devote the present article to a notice of hemp and its cultivation; the next to a similar notice of flax; and shall then describe the process of manufacturing the fibres thence obtained, into cordage.

The *Cannabis sativa* is a plant having a stem six or eight feet in height, upright, somewhat quadrangular, hairy at the surface. An oil is extracted from the seeds, and the seeds themselves are given to birds as food; but the fibrous substance of which the stem is composed is that which renders the plant most valuable, as a material for ropes. The hemp plant was mentioned by Herodotus as a native of Scythia. According to Linnæus it grows in the East Indies. Thunberg says it is occasionally found in Japan. Gmelin found it in Tartary; and Hennepin met with it among the Illinois, in North America. But wherever the plant was first cultivated, it has become now one of the products of several European countries.

The soil best adapted for hemp crops is of a deep, black, vegetable texture, in a low situation, and somewhat exposed to moisture. But a deep mellow, loamy, or sandy soil will produce good hemp, though rather less in quantity. In preparing the ground, the plough and harrow are much in requisition, to bring it to a fine mellow condition, and to free it from weeds. Where hemp immediately succeeds a corn crop, there are usually three ploughings, and an equal number of harrowings; the first being performed as soon as possible after the preceding crop is removed; the second as early as it can be done in the spring; and the last, immediately before the seed is sown. A large quantity of good manure or compost is added at the time of the last harrowing.

The seed is sown in quantities varying under different circumstances, and in two different manners. Some cultivators adopt the broadcast mode, that is, disperse the seed over the surface of the prepared ground as evenly as possible, and then cover it in by means of light harrowing. Others effect it by drilling, or sowing the seed in parallel drills or shallow trenches. The proper time for sowing is when the danger of early spring frosts is over, for instance, in the month of April; and the sooner it is effected after the commencement of favourable weather the better, as it gives a superior vigour to the early growth, and enables the plant to stand better the subsequent operations. This is a kind of crop which is capable of being grown after most other sorts, and even on land broken up from the state of sward. It has been grown on the same spot of ground for a great number of years, without the intervention of any other crop; indeed this has been the case in some parts of Suffolk for seventy successive years, but with the almost constant use of manure to prevent the exhaustion which would otherwise result. It is necessary, when the seed of the hemp plant has been sown, to use much caution in keeping the birds from the ground, as they otherwise soon devour a large proportion of the seed.

When the seed has once been deposited in the ground, a little attention from the cultivator is all that is necessary; the tall growth and thick shade of the plants, from the nature of the foliage, soon covering the surface, so as to prevent the rising of every sort of field weed.

When the crop has become perfectly ripe, which is known by its assuming a whitish yellow colour, and by the stems beginning to shed their leaves, it is ready to be pulled or taken up. The pulling is effected by forcing the plant up by the roots from the ground in

small portions at a time, with the hand, shaking off the mould from them before the parcels are deposited upon the surface. The business is commonly executed in a little more than three months from the time of putting in the crop. As soon as the labour of pulling is finished, the hemp is tied up into small bundles, or what are commonly termed *barts*.

After this process, the stems are prepared for the separation of the fibres, by an operation called *retting*, of which there are two kinds, *dew-retting* and *water-retting;* both of which are effected more favourably when the weather is rather showery.

In *dew-retting*, the hemp stalks, immediately after being pulled, are spread out in a thin, even, and regular way, so as to keep exact rows on a fine piece of close, old sward land, which is pretty even on the surface, for the space of three, six, or even eight weeks, according to circumstances, being turned as often as may be necessary in the time. In showery seasons, this is mostly done three times a week. As soon as the rind or bark of the hemp plant becomes easily separable from the firm part of the stem, it is taken up from the ground, and tied up into rather large bundles, in order to be carried home and stalked up, or placed in some covered building till it is wanted for being formed into hemp. This process requires great nicety and attention, in order to prevent the texture of the hemp from being deteriorated by too long a continuance on the sward; or by removing it at too early a period, before the hempy substance has been rendered sufficiently separable.

In *water-retting*, which is much more common than the method just described, the hemp, after being wholly taken up, and bound into rather small bundles, by means of bands at each end, is carried to a pond or pit of standing water. It is there deposited, bundle upon bundle; and when it has been piled to such a thickness as the depth of the water will admit, usually about five or six feet, the whole mass, now called a *bed* of hemp, is loaded with large pieces of heavy wood, until it is completely immersed. When it has remained in this state for five or six days, it is taken out and conveyed to a piece of mown grass or other sward land, that is perfectly clean and free from the access of animals. There the bundles are untied, and the hemp stalks are spread out, one by one. While in this state, especially in moist weather, it must be carefully turned every second day. It is continued in this way for five or six weeks; after which it is gathered up, tied in large bundles, and kept perfectly dry in a house or small stack, until wanted for use.

In some parts of Scotland, after the hemp is pulled, and the leaves, seeds, and branches removed by means of an instrument called a *ripple*, it is formed into bundles of twelve handsfull each, and steeped in water for six or eight days. It is known when it has had sufficient steeping by the reed being readily capable of parting from the bark. The most slender hemp stands in need of the greatest amount of steeping. After being taken out of the water, the hemp is not spread out upon grass-ground in the manner spoken of above, but is dried as quickly as possible, by setting it in an inclined position against cords fastened up for the purpose, or in any other way that will afford it the full benefit of the air, until it is completely dry, and the bark blisters up from the reed.

A method was introduced into France some years ago, by M. Brealle, of steeping hemp and loosening the bark in a much shorter time than as commonly practised. The process consists in heating water in a vessel or vat to the temperature of 73° or 74°, Reaumur, and dissolving in it a quantity of green soap, in the proportion of 1 to 48 of the hemp. The quantity of water made use of in this process should be about forty times the weight of the hemp. When the liquid is prepared, the hemp is thrown into it, and made to float on the surface, the vessel being immediately covered, and the fire put out. In the course of two hours' steeping under these circumstances, the hemp is said to have attained the desired state. The superiority of this method is supposed to consist in a great saving of time and expense, and in the production of a larger quantity of tow from a given amount of hemp: but from this calculation is to be deducted the value of the fuel expended in heating the water. It would appear, that if this speedy method is really found so effective as is stated, it would promote the cultivation of hemp crops, by the facility which it affords to the subsequent processes, even in such situations as are not contiguous to rivers, streams, or ponds, and would also obviate any ill consequences that might originate from the putrid effluvia sent into the atmosphere, and prevent the corruption of the waters which, during the steeping of the hemp, are known to destroy the fish contained in them, as well as to prove hurtful to cattle that drink therefrom.

Among various improvements suggested in the mode of steeping hemp, one by Mr. Rainbeard has been recommended, as a means of effecting it without exposing the persons employed to be wetted. The pond is an old marl-pit, with a regular slope from one side, (where the hemp is prepared,) to the depth of eight feet on the other side. On the slope, above the water, the hemp is built into a square stack, upon a frame of timber of such a height as will float and bear a man without wetting his feet. The frame, with its load of hemp, is slid down into the water, a person on the opposite bank drawing it forward. When the stack floats, the frame is drawn away, and the load of hemp sinks to the bottom; after which another load is lowered in a similar manner.

There are a few details relating to the statistics of the Russian hemp trade, and the cultivation of the hemp plant, in Russia, in our 308th number*. We shall not enter, therefore, into any further details in this place.

The subsequent processes, by which the fibres are obtained from the stalks of hemp and prepared for the use of the rope-maker, bear so close a resemblance to the analogous processes in the preparation of flax, that one description will be found available for both. We shall therefore, in the next paper, after giving a description of the flax plant and of its cultivation, briefly notice the processes here alluded to, preparatory to a sketch of the operations of rope-making.

HEMP, (*Cannabis sativa.*)

* See *Saturday Magazine*, Vol. X., p. 145

LONDON:
JOHN WILLIAM PARKER, WEST STRAND.
PUBLISHED IN WEEKLY NUMBERS, PRICE ONE PENNY, AND IN MONTHLY PARTS, PRICE SIXPENCE.
Sold by all Booksellers and Newsvenders in the Kingdom.

THE

Saturday Magazine.

Nº 612. JANUARY 15TH, 1842. { PRICE ONE PENNY.

THE SLEEPING CHILDREN. FROM THE MONUMENT BY CHANTREY IN LICHFIELD CATHEDRAL.

SIR FRANCIS CHANTREY AND HIS WORKS.

I.

WE have been anxious to present to our readers some notice of the life and works of the great sculptor whose recent sudden death has caused so much grief to the lovers of British art.

In collecting from various sources the materials necessary for our purpose, we have found some trifling discrepancies in the details respecting his early life, and we cannot vouch for having in every case chosen those which are the most consistent with truth, though it has been our endeavour to do so*.

It will be seen that the individual who has been so long and so justly celebrated as the most eminent sculptor that the English nation has produced, was not exempted in his early years from the difficulties and discouragements which so often beset the path of genius. Let the example of his persevering diligence stimulate those who are labouring unheeded and unknown in a path which they feel to be one that leads to real excellence.

FRANCIS LEGGITT CHANTREY† was born on the 7th of April, 1781, at Norton, a pleasant village on the borders of Derbyshire, and about four miles south of Sheffield. Within the last forty years there stood on the lawn of Norton House, the ruins of an ancient *chantry*, from which it has been assumed that the surname of the sculptor's family had been originally derived. This may be only a mere fancy, but it is certain that his ancestors had been long settled in and about Norton, the name being of early and frequent occurrence in the church register. Their rank in life was humble: the father of Chantrey was a carpenter, who also rented and cultivated a few fields; besides which he owned some land at a distance, the old tenants of which used to make favourable mention of the goose-pie which Dame Chantrey was wont to produce on the rent-day.

The farm-cottage, in which Chantrey was born, still exists in a modified state, as does also the village-school at which he acquired the rudiments of knowledge. He was deprived of his father very early in life, and being an only child, was educated by his mother with much tenderness and solicitude. Education and agriculture occupied him till his seventeenth year. During his leisure hours his favourite amusement was to make resemblances of various objects in clay, and on churning-days to mould his mother's butter into various forms, to the great admiration of the dairy-maid. But his affection thus early shown for art, was but a matter of amusement—he calculated as little on the scope it presented to the ambition of genius, as he was unconscious that it was the path which nature had prepared for his fame.

About this time, according to one authority, he became weary of the pursuits of his forefathers, and resolved to study the law, under a respectable solicitor at Sheffield. Whether this was his own choice, or that of his relations, we do not know; or whether, according to another authority, he was placed with Mr. Ebenezer Birks, in Sheffield, in order that he might become a grocer, is also uncertain; but it matters not, for another destiny awaited him. To unforeseen circumstances, we owe much of what we are willing to attribute to our wisdom; and certainly, to such circumstances in the life of Chantrey, do we owe whatever delight we have received from the productions of that artist.

The day named for commencing his new profession arrived, and, with the usual eagerness of youth for novelty, he reached Sheffield a full hour sooner than his friends had appointed to meet him. As he walked up and down, the street, expecting their coming his attention was attracted by some figures in the window of one Ramsay, a carver and gilder. He stopped to examine them, and was not without those emotions which original minds feel in seeing something congenial. He resolved at once to become an artist, and, perhaps, even then associated his determination with those ideas and creations of beauty from which his name is now inseparable. What his friends thought of his sudden resolution it is useless to inquire, they listened to his request, and bound him for the usual term of years as an apprentice to Ramsay.

The labours in which Ramsay employed him were too limited for his powers: his hours of leisure were therefore dedicated to modelling and drawing, and he always preferred copying nature. He had no other idea of style but that which nature supplied; he had his own notions of art and of excellence to rough hew for himself, and the style and character he then formed he afterwards pursued with success. These speculations were much more pleasant to him than to Ramsay, who, incensed either at the enthusiasm with which they were followed, or the success with which they were executed, defaced them, and ordered all such labours to be discontinued in future. For this conduct it was difficult to find either an excuse or a parallel.

During the intervals of his ordinary labour, Chantrey was not found amusing himself like other young men: he retired to a lonely room in the neighbourhood, which he hired at the rate of a few pence weekly, and a light was always to be seen in his window at midnight, and frequently far in the morning; for there was he employed in working at groups and figures, with unabated diligence and enthusiasm. Of these early efforts little is now visible, except the effect they wrought. His mother took great delight and interest in the secret labours of her son, and lived long enough to see him rising to the reputation he deserved. Chantrey had passed nearly three years with Ramsay, when his clandestine labours began to attain notice. Judicious counsellors seldom fall to the lot of early genius, and many of Chantrey's friends, in the warmth of misjudging zeal, wished to obtrude him on the world before his talents were matured, or his mind disciplined. Others of more discernment confirmed him in his natural and correct notions of art, and directed his enthusiasm. Among these was Mr John Raphael Smith, mezzotint engraver and portrait painter, who, being himself a man of talent, soon discovered the young artist's powers, and took pleasure in directing the efforts of his genius. To perpetuate the memory of this kind instructor, Chantrey subsequently executed one of the finest busts that ever came from his hands. From a statuary of some talent, (the same who executed the two small figures that stand in the niches on either side of the doors of the Sheffield Infirmary,) he also obtained some instruction in the manual and technical arts of modelling and carving in stone.

We must here interrupt the course of our narrative, in order to give the full notice it deserves to the monumental figures which appear in our frontispiece; and which were executed at a time when Chantrey had surmounted his early difficulties, and was newly made an Associate of the Royal Academy.

The monument was executed in memory of the two infant children of the late Rev. William Robinson; and was exhibited in the Royal Academy, in the year 1817. Were we to detail the notices of the effects produced by this affecting group, upon some of the female visitors especially, they would appear greatly exaggerated; those, however, who have seen the figures will readily imagine from their own emotions, how affectingly they must appeal to the tenderest sympathies of parents, and especially of bereaved parents

* For the early passages in the life of the sculptor, and for several judicious remarks, we have to acknowledge our obligations chiefly to a well considered and well-written critical notice which appeared many years ago in *Blackwood's Magazine*.

† From a copy of the register of Chantrey's baptism, given in the *Gentleman's Magazine*, it appears that *Leggitt* was not his baptismal name, and that the house at Norton where he was born was called Jordanthorpe.

These figures form one of the chief attractions to visitors to Lichfield Cathedral. The monument is situated at the eastern extremity of the south aisle, and bears on the pedestal, for its sole inscription, the following line, from MILTON,

Oh, fairest flowers! no sooner blown than blasted!

The monument is so placed as to be relieved against a slab of black marble, reared on the wall behind to the memory of the late Rev. William Robinson himself,—whose funeral memorial is thus made to form a dark pyramidal back-ground to the tomb of his own children. The figures on the monument are of the size of life. They represent the two sisters lying asleep in each other's arms in the most unconstrained and graceful repose. Never was sleep and innocence and artless beauty more happily expressed than in those beautiful and breathless images of death. The idea of *paleness* even in marble is retained on the countenances, and there is something in their whole appearance that tells of a sleep too still and deep for that of living beings. "In the midst of the greatest stillness, there are suggestions of a struggle ended and an anguish passed away." They were placed in the exhibition by the side of the Hebe and Terpsichore of Canova, and we are told that the goddesses obtained few admirers compared to them. So eager was the press to see them, that a look could not always be obtained; mothers stood over them and wept; and the deep impression they made on the public mind must be permanent.

The following remarks by Mr. Britton, were penned in Lichfield Cathedral, with the monument immediately before him.

This memorial may be regarded as original in design, and tasteful in execution; and, as calculated to commence a new era in our national monumental sculpture, must be viewed with exultation by every real lover of art. From the demise of Henry the Eighth to the beginning of the present century, the soulpture of this country has rarely presented anything admirable or excellent. It has either exhibited a vulgar imitation of vulgar life, in monstrous costume, or tasteless copies of Greek and Roman models. The present age, however, is likely to acquire a better, and indeed a good character, and prove to surrounding nations, that while Britain is justly renowned for science, commerce, and arms, she boldly and confidently prefers a claim to competition with former ages in her artists. Some departments have certainly failed, either for want of talents or for want of patronage; but the sculptor is now publicly employed and publicly rewarded; and if something truly English, original and interesting is not produced, we shall still have cause to attribute the failure to the ungenial climate of Britain, or the want of talents in our countrymen. In traversing the abbey church of Westminster, and that of St. Paul's, we look in vain for tasteful and apposite English sculpture. Almost every subject is disfigured by unintelligible emblems, mythology and allegory; and crowded with lions, fames, and angels. It is time this incongruity of composition, this violation of taste, be avoided, and that a little of nature, of Shakspeare and of England be substituted in the place.

To appreciate Mr. Chantrey's monument fully and justly, we should inquire what has been effected by the sculptor; what is usually done, and what the art is susceptible of. The Egyptians, Greeks, and Romans have certainly left behind them many works of peculiar beauty and excellence; they have also bequeathed to us many pieces of inferior workmanship. In the former we readily perceive their reference to nature as a prototype; and in the latter, the presumptions of art. It is thus with sculptors of the present age: most of them are wholly educated in the school of art—in studying and copying from the antique; whereas the greatest masters of the old world sought beauty of form and truth of expression in the inimitable and diversified face of nature. Hers is an unerring and unmannered school; it is untrammelled by laws and regulations: every student may readily obtain admission into it, and freely pursue the bent and energy of his genius. From this school arose the artist who executed the monument now under notice: he looked at living models and English forms for prototypes; and has skilfully extracted from the shapeless marble the resemblance of two pleasing female figures. These, however, are not common-place forms, nor imitations of Venuses, Graces, or Hebes; but they faithfully and feelingly resemble the persons of young and lovely maidens. These are represented as lying on a couch; the head of the eldest impressing the downy pillow, and that of the youngest reclining on the other's bosom. One of its arms is beneath her sister's head, and the other extends over the body. In one hand is a bunch of snow-drops; the blossoms of which are apparently just broken off, but not withered. The faces of both incline towards each other with apparent affection—the eyelids are closed, and every muscle seems lulled into still and serene sleep; all the other bodily members partake of the same serenity and repose. The arms and the legs, the fingers, and the very toes, are all alike equally slumbering: the drapery is also smooth and unruffled, and is strictly in unison and harmony with every other part of the design. The whole expression seems to induce silence, caution, and almost breathless solicitude in the observer. A fascinating and pathetic sympathy is excited; at least, these were the effects and sentiments produced on myself in contemplating it alone, and towards the close of day. Analyzing it as a work of art, and endeavouring to estimate its claims to novelty, beauty, and excellence, I must own that all my powers of criticism were subdued by the more impressive impulses of the heart. With these sensations, and with mingled emotions of admiration at the powerful effects of English art, and the appeals to nature, through this medium, I was turning away from the pleasing group, when the plaintive song of a robin, which had perched in the adjoining window, diverted the train of reflection, but touched another chord of the heart, which vibrated in perfect harmony.

The following little poems on these fair young sleepers are from the respective pens of MRS. HEMANS, and the REV. WILLIAM LISLE BOWLES.

THE SLEEPING CHILDREN.

Thus lay
The gentle babes, thus girdling one another,
Within their alabaster innocent arms.—SHAKSPEARE.

FAIR images of sleep,
Hallowed and soft and deep!
On whose calm lids the dreamy quiet lies,
Like moonlight on shut bells
Of flowers in mossy dells,
Filled with the hush of night and summer skies!

How many hearts have felt
Your silent beauty melt
Their strength to gushing tenderness away!
How many sudden tears,
From depths of buried years,
All freshly bursting, have confessed your sway!

How many eyes will shed,
Still, o'er your marble bed,
Such drops, from memory's troubled fountains wrung,
While hope hath flights to bear,
While love breathes mortal air,
While roses perish ere to glory sprung!

Yet from a voiceless home,
If some sad mother come
To bend and linger o'er your lovely rest,—
As o'er the cheeks' warm glow,
And the soft breathings low
Of babes, that grew and faded on her breast,—

If, then, the dove-like tone
Of those faint murmurs gone,
O'er her sick sense, too piercingly return,—
If for the soft, bright hair,
And brow and bosom fair,
And life—now dust—her soul too deeply yearn,—

O gentle forms!—entwined
Like tendrils, which the wind
May wave, so clasped, but never can unlink,—
Send from your calm profound
A still small voice, a sound
Of hope, forbidding that lone heart to sink!

By all the pure meek mind
In your pale beauty shrined,
By childhood's love—too bright a bloom to die,—
O'er her worn spirit shed,
O fairest, holiest Dead!
The Faith, Trust, Light of Immortality!

THE SLEEPING CHILDREN.

Look at those sleeping children! softly tread
Lest thou do mar their dream, and come not nigh
Till their fond mother, with a kiss, shall cry
"'Tis morn! awake! awake!"—Ah! they are dead!
Yet, folded in each other's arms they lie,
So still—oh look! so still and smilingly,—
So breathing and so beautiful they seem
As if to die in youth were but to dream
Of spring and flowers!—of flowers! yet nearer stand!
There is a lily in one little hand
Broken but not faded, yet,
As if its cup with tears were wet:—
So sleeps that child!—not faded, though in death,
And seeming still to hear her sister's breath,
As when she first did lay her head to rest
Gently on that sister's breast,
And kissed her, ere she fell asleep;—
The archangel's trump, alone, shall wake that slumber deep!
Take up those flowers that fell
From the dead hand, and sigh a long farewell!
Your spirit rests in bliss;
Yet ere, with parting prayer, we say
Farewell for ever! to the insensate clay,
Poor maid! those pale lips we will kiss.—
Ah, 'tis cold marble!—Artist, who hast wrought
This work of nature, feeling and of thought,—
Thine, CHANTREY! be the fame
That joins to immortality thy name.
For those sweet children, that so sculptured rest,—
A sister's head upon a sister's breast,—
Age after age shall pass away,
Nor shall their beauty fade, their forms decay
For here is no corruption,—the cold worm
Can never prey upon that beauteous form;—
The smile of death that fades not, shall engage
The deep affections of each distant age;—
Mothers, till ruin the round world hath rent,
Shall gaze, with tears, upon the monument;—
And fathers sigh, with half suspended breath;
"How sweetly sleep the innocent, in death!"

SKETCHES OF IRISH MANNERS AND CUSTOMS.

II.

THE beggars in Ireland attract a great deal of attention from strangers, and are regarded with surprising *nonchalance* by the natives: they come in gangs—in droves, —in every imaginable degree of "looped and windowed" raggedness; yet generally speaking, hale, fat, and handsome; and personally cleaner than similar mendicants in England. I have only seen one woman who gave me any idea of destitution out of the hundreds that have come to our house. Their manners are very strange. Many of them open the house door, then open the kitchen door, walk in and sit down, and begin to talk. Some are content with opening the house door, and standing quietly,—now and then giving a little cough to attract attention; when they are spoken to, they beg without the servile whine of professional English beggars. If they receive a halfpenny they are grateful, if they are denied they generally depart civilly, but sometimes all the saints are called down against us. Their incursions into houses are carried rather too far. A boy one day opened the house door and crept up stairs. The servants at first thought it was my step, but not being satisfied they came to the sitting-room, where I was found quietly occupied; they then ran up stairs, and found the young gentleman in my bed-room, and he frankly confessed that he came for what he could get. As the master and the man-servant were out, he escaped with a good scolding.

They are considered very honest generally, and doors are left unlocked, and linen remains on the roadside hedges night and day with perfect safety; but it was a disagreeable adventure, and their noiseless approach with their bare feet makes their appearance often quite startling. Their language and manners are much better than the English; but there is a difference between the beggar-men and the rag-men, if I may so call them; in dress they are pretty much alike, but one wears the tatters of poverty, the other of indolence. When first I came I was quite confounded at the intelligence and good manners we found under the rags; their minds and bodies were in good repair, it was only external dilapidation. A little old man, with a beard three weeks old at least, basking in the sun, his coat in shreds, and the brim and crown of his hat declining partnership, received a shilling or two for a little job he had done, with a bow and an air that was quite astonishing, and his "Sir, I thank you; sir, I am obliged to your honour," was uttered in a way that reminded me of what we hear of old French politeness,—he might have been the Chevalier de St. Louis selling his patés.

My rag-men and women do not seem to have a notion that they are not very respectable; a timely needle and thread would have set all right, but the women are not much addicted to stichery, and the very late hours of the lower class in the morning keeps them running after time the rest of the day. An old farmer in our neighbourhood, of considerable means and reputation for skill, goes about in such a state of squalid raggedness, worse than many of the beggars, that for some time I wondered why he did not beg, and expected every time I passed him to see his crutch tucked under his shoulder, and his hat doffed for an alms. Not a bit,—the man is as independent as myself; but his wife milks her cows at 9 o'clock in the summer, and just gets up for the operation, and sent me word that after June she should milk at 12, and at 5, or 6, or 7, just as it might be,—so the milk, and the butter, and the husband's gear are all in a sad state. My next milk-woman made a great merit of milking before 9, which however she rarely does, and in all the houses and shops, the same morning dawdling is prevalent. They have a strange notion that milk cannot be too old before they churn, and made of such half putrid stuff no wonder the butter, bad at first, will not keep two days in an eatable state. Many goats are kept in our neighbourhood, and a good deal of goat-butter made: it was brought once to our house for sale; it was very white and uninviting, but the smell was less potent than the cow-butter beside it. I had not courage to make an experiment on the flavour.

The commissariat department is very perplexing at first. "Would yer honour be plazed to require any mate?" said a ragged Patlander one day, lugging along a sheep with so enormous a fleece that a little black face and four little hoofs alone peeped out, and they seemed very inadequate supporters of the mass. Not wishing to purchase a gentleman under so thick a disguise, we said we would see him the next day, when he was dead, and take half. Something disconcerted the plan, till there was an inquiry what Pat O'Lack was doing? "Oh sure, yer honour, he's selling a sheep." We sent down immediately; not a hoof was left, but he was going into the mountains to look for a sheep soon, and in the meantime we had to forage as we could. Beef is so scarce here that when they do slay a bullock I wonder it is not by tuck of drum. Veal is unknown hereabouts, except by an extraordinary practice of killing and eating the new-born calf under the name of Staggering Bob. I hear it is good, eating more like lamb than veal,—but I have not seen any, nor do I fancy it would be offered for sale at gentlemen's houses.

The meat here is most horribly killed and generally cut up hot, or if allowed to hang a few hours, it shares the room with the family, as there is not such a thing as a butcher's shop in the glens. One man has a dark hole in which he kills his beasts, and without a window or air gap of any sort, and where he locks the carcase up, which of course will not keep. We tried to persuade him to remove a stone or two, and put up a lattice, which he allowed would be a great advantage, but he has never

made the effort, and I dare say never will. For three months meat is scarcely to be procured in the mountain districts. The poultry-yard and the salting-pan are the great dependence, and woe to those who are not well provided against what is called the waur quarter: great quantities of poultry are reared in the cabins and brought round the country for sale and fattening, and to those used to shops and markets it is strange to see the distance they will trudge with a hen or a cock, or two or three chickens, a cargo worth from 8*d.* to 10*d.* Many have been greatly alarmed at being ordered to insert the quality and quantity of their poultry in the census papers, thinking some tax will be laid upon them, which will quite swallow up their small profits, and they are selling them off to avoid it.

I have wandered away from the beggars, and I must describe a very ragged old man who came to us one day begging: he was a hearty old fellow, much given to idleness and gathering, that is, collecting in an Edie Ochiltrie pack, small contributions of meal and potatoes on which he and his motherless children subsisted; he was offered work, but declined under various pretexts, but at last took a silver bribe and set to work with some masons who were about our house, which he was well able to do and had done before. At one o'clock he wanted very much to go home, he was hungry; knowing he would never return, a plateful of meat and potatoes was given to him, and he was asked if that would do? "That will it, right well;" he then worked on awhile, watched his opportunity, and had nearly escaped to the road that he might go gathering: he was brought back, and assured that if he left his work before the other men he would receive nothing. The repetition of this threat from time to time kept him tolerably to his business, but with much murmuring, though he knew his day's labour would keep him and his family in potatoes for a week. He seemed to have a true Edie antipathy to exertion, but a love of liberty, and to be bringing up his children to the same, and there are too many of his faction. Many of the beggars first plant their own potato ground, and then take to the road and live upon their fellow-creatures till the crop is ready, and then return to dig. The uselessness of the children is very striking: every day in the spring we saw the mother and the grandmother, and perhaps the father, weeding and trenching up the potatoes, and whole droves of stout fat boys and girls from four to fourteen lounging about on the walls and fences, playing or fighting, as might be, without an idea of assisting in the labour. If they can, they go to a school, where discipline seems often rather more strenuously enforced than would be approved in England. Besides this uselessness their cowardice is very curious: at least we have met with odd instances strangely in opposition to the independence of English children.

Our dairy-woman lives a short quarter of a mile from us, an excellent, well-frequented, open road the whole way, but in the evenings no child will bring down the milk. Sometimes three or four come paddling down, protecting each other, and guarding the little pitcher; but generally they are afraid, and our servants have to fetch in, contrary to an express stipulation with the woman. The utter indifference to rain amongst the children, is another oddity—I do not mean in the execution of errands, but merely on their own account. I see almost daily four little children, from two to five years, whose parents have comfortable homes and fires for them, but bare-headed and in torrents of rain, with bare necks and arms, this group of remarkably pretty children continue their gambols with each other, with our dogs, or even alone, as perfectly careless of their soaked condition as my ducks.

The Irish are reputed servile in their manners to their superiors: they are much changed, or I see with different eyes, for I think them extremely and curiously independent: they never touch their hats or curtesy; they continue seated constantly, men and women, whilst I stand talking to them on business in my own house: they begin by asking more for everything than is fair, having determined what they will really take; and they are said often to make each other an offer before starting that they may with truth say they have refused such a price before coming to me. If their demand is altogether unreasonable and refused they go off in great displeasure, and frequently will return to the house no more. A woman said it was not worth her while to come out of her way to us with better fruit than that we refused, though she could not help passing within fifty yards of our door: this with a sure market would be nothing, or with any spare money; but with a very precarious sale, and not a penny before them, it is very strange. There is so little money circulating, that if we send for two or three shillings' worth of anything in the morning, in the evening, or the next day at furthest, comes a note—"Dear sir,—Will your honour be plazed to settle my little account?" Even in great shops in large towns we were asked, in a very peremptory manner, for payment of some carpets and woollen furniture within five weeks of its arrival; and another shop in great business intimated a desire for payment ten days after the goods had been received, knowing perfectly well that from the awkward communication we could only pay one day in the week. Ready money is indispensable here: not one of our small venders can give one penny of change, and we are obliged to be fully prepared, which is rather troublesome. Our practice of receipts for everything surprises them: they send an old woman or a little child to receive their money, and doubtless think it very hard that we insist upon the creditor himself appearing with bill and receipt before we part with our coin.

The Irish will not rob, but they have no objection to cheat and over-reach, which they do very successfully for a time with strangers,—extremely indebted for their success to the number of people bearing the same name, for it is exceedingly perplexing amongst the many Mc Donnells, Mc Aulays, Mc Alisters, Mc Elherens, &c., &c., with whom one is concerned, to put Nats, and Mats, and Pats to the right persons. Having engaged to send a quantity of goods a certain distance for 2*s.* per cwt., by some ingenious manœuvring and shuffling of namesakes and allies we paid above 10*s.*, per cwt. perfectly aware we were cheated, but unable to extricate ourselves. Michael and Patrick and Donald all protested so vehemently that it was all right, and that "they would take legal measures against our honour's honour" if we did not pay each and all, that the usurious demand became the least evil. A written agreement to be sure would have secured us; but who thinks of such a thing with a carrier of excellent repute till experience has proved the necessity of the precaution?

HAS THE MOON ANY INFLUENCE ON THE WEATHER?

It has been remarked by M. Arago, a distinguished French philosopher, that in the question whether the moon has any influence on the weather or not, there are two opposite opinions. The great mass of the people, including sailors, boatmen, and most practical farmers, entertain no doubt whatever of the influence of the moon: whether the change of the weather at the full-moon, new-moon, or quarters, will be from fair to foul, or from foul to fair, few of them venture to prognosticate beforehand; but most of them think that a change of some kind will occur at those epochs. On the other hand, astronomers, and scientific men in general, attribute this opinion to popular prejudice; finding no reason in the nature of atmospheric tides for believing that changes should take place on one day of the lunation, rather than on another.

Under these circumstances Arago, and other scientific men on the Continent, have carefully examined the observations which have been made on the weather in different years, with a view to discover whether any particular kind of weather takes place on the days of new and full moon. The first feature to which they have directed their attention is that of

Rain. There are three *pairs* of periods, if we may use the term, in which the moon's influence may be compared; 1st. New moon and full moon, or the times when the moon is respectively nearest to and farthest from the sun; 2nd. Perigee and Apogee, or the periods when she is respectively nearest to and farthest from the earth, in the course of the monthly revolution; 3rd. North declination and south declination, or the times when the moon remains the greatest and the least number of hours, respectively, above the horizon in one day. The conclusions of Arago and others have been drawn principally from these several epochs. Dr. Mädler, of Berlin, made observations on the moon six times a day for sixteen years; from which he found that a somewhat less quantity of rain and snow falls at Berlin, while the moon is in apogee, than when in perigee.

Professor Schübler, of Tubingen, made a series of observations on the weather for the long period of twenty-eight years. He found, that in twenty years there had been 3066 rainy days, of which 1609 had occurred while the moon was increasing, *i. e.*, passing from new to full; and 1457 while the moon was waning, *i. e.*, passing from full to new. The greatest number occurred between "first quarter" and "full," and the least number between "last quarter" and "new;" the the other two periods being almost exactly equal to each other. As most of the years, when taken individually agreed pretty well with the combined result, it led to a tolerably safe conclusion, that in central Germany there is more probability of rain a little before full moon than a little before new moon, in the proportion of six to five. Schübler then varied his calculations, taking the actual day of "new," "full," &c., instead of periods of seven or eight days each. He found that in twenty-eight years, there had been 148 rainy days on the day of new moon, 156 on the day of the first quarter, 162 on the day of full moon, and 130 on the day of the last quarter, from which it appears that the day of full moon has been most subject to rain of these four; but he also found that at about half a week before full moon the chance of rain was still greater, and exceeded that of every other day in the lunar month.

M. Poitevin, at Montpellier in France, arrived at results different from those here indicated. He found, from ten years' observations, that at new moon there was one rainy day out of four, at first quarter one out of seven, at full moon one out of five, and at last quarter one out of four. Here we see that at Montpellier it rained more frequently on the day of new than of full moon; whereas a contrary result was observed in Germany. M. Pilgram, from observations made at Vienna, found that if there were 26 rainy days at new moon, there would be 29 at full moon, a result pretty well agreeing with that of Schübler. An extensive series of observations, made at Geneva for a period of thirty-three years, shew that the number of rainy days in that city, at the four epochs of the moon's age, are—new moon 123 days, first quarter 122 days, full moon 132 days, last quarter 128 days. Here the number is greater for full moon than for new, as in most of the other series of observations. But when actual *quantity* of rain is considered, instead of the mere number of days on which some rain may have fallen, a result is obtained which overturns any conclusions drawn from the above results; for if the quantity of rain which fell on the days of new moon be represented as 432, the quantity at first quarter was 430, at full moon 416, and at last quarter 369; thus shewing that more rain fell at new than at full moon, although there seemed to be a greater probability of *some* rain falling at full than at new.

Dr. Marcet examined these Genevan observations, with a view to determine whether a *change of weather* is more liable to happen on the four principal days of the lunar phases than on other days. But this expression, "change of weather," is in common parlance, taken in a very vague and indeterminate sense; and it therefore becomes necessary to give some precise meaning to it. Dr. Marcet limits the term to a change from clear weather to rain, or from rain to clear weather; and does not use the term unless the weather has been steady during two days at least. For example, a week has passed without rain; it rains on the eighth day, and on the ninth the weather is again fine; in this case he would not speak of a change of weather. So also if it has rained for five successive days, the sixth and seventh must be clear in order to constitute what he would designate by this term. Under these limitations of the expression "change of weather," Dr. Marcet found that in thirty-four years there had been 1458 such changes at Geneva, of which 54 occurred on the days of new moon, and 51 at full moon. If the changes occurred equally at every period of the moon's age, about 49 would occur on each day of the lunar period; consequently more changes of weather occurred on the days of new and full moon than on the average of other days. It appears also, that in two cases out of every three, the change of weather at new and full is from rain to fine, the change from fine to rain occurring only once out of three times. Upon the whole, an examination of the phenomena at Geneva lends some support to the common opinion of the influence of new and full moon, but none whatever to any special influence of the first and last quarters.

Another mode of considering the effect of the moon is in relation—not to the actual precipitation of rain—but to the cloudiness of the sky, occasioned by the condensation of the watery vapour suspended in the air. In order to classify the observations on this point, Arago agreed to call a day "fine" if the sky were clear at seven in the morning, and at two and nine o'clock in the evening; and to apply the term "cloudy" if the sky were obscured at those times. He took sixteen years of observations at Augsburg, and found that at new moon there were 31 fine days, and 61 cloudy, at first quarter 38 and 57, at full moon 26 and 61, and at last quarter 41 and 53. These results agree pretty nearly with those before mentioned of Schübler's, which gave more rainy days in the week preceding full moon, than in any other week of the lunar month. The actual quantity of rain fallen, also agrees; so that whether we regard the probability of having a rainy day, the probability of having a cloudy day, or the quantity of rain, these observations by Schübler show the probability to be greater, at and near Augsburg, shortly before full moon, than at any other part of the month.

Schübler also corroborates the observations of Mädler, that a little more rain falls at and near perigee, than at or near apogee; that is, that the quantity of rain slightly increases as the moon approaches the earth. He found that in twenty-eight years, there have been 1169 rainy days in the weeks which have included the perigee, and 1096 in those which included the apogee. Pilgram's observations at Vienna gave a still more prominent exhibition of the fact, that more rain falls when the moon is nearest to, than when furthest from, the earth.

There have been too few extended and correct observations of weather, to admit of any undoubted conclusions being drawn; but on the whole, there appears some reason to believe, that on and shortly before the day of full moon, the weather is more rainy than at any other part of the month.

Barometrical Pressure.—Dr. Schübler has found at Berlin, that the barometer stands a minute degree higher

when the moon is in apogee than when in perigee. He also found with respect to the age of the moon, that the barometer is higher on the day of new moon, and lower two days after full moon, than at any other date of the moon's age. These differences of height are, however, exceedingly minute, amounting to no more than one-twelfth of an inch. From four years' observations made in Western Africa, where the atmosphere is not exposed to such fluctuations as in Europe, the days of greatest and least barometrical height have been found the same as at Berlin, viz., new moon, and the second day after full moon, but the amount of difference is only one-sixtieth of an inch. At the same place there has also been observed an effect produced by the varying *declination* of the moon; the barometer being lower when the moon is at the greatest northern declination, than at other declinations.

M. Flangergues, from a series of twenty years' observations at Viviers, found that the barometer was higher at last quarter, and lower when the moon is about eleven days old, than at any other period. These dates, it will be perceived, do not correspond with those at Berlin. He also found that the height is greater at apogee than at perigee. Astronomers use the term "quadratures" both for the first and last quarters, and "syzygies" both for new and full moon; and we shall therefore be understood when we say that from the observations of Flangergues at Viviers, of Poleni at Padua, and of Bouvard at Paris, it is found that the barometer is a trifle higher when the moon is in quadratures than when in syzygies. M. Arago compared all these observations together very carefully, and came to the conclusion that the barometer *is* affected at certain periods of the moon's age: and that this effect is not produced by the same attractive force which produces the tides of the ocean, but some other force, whose nature is at present quite unknown to us.

Temperature.—Dr. Mädler has found that the thermometer at Berlin is slightly higher when the moon is in apogee than when in perigee. He also perceived that the height is greater two days before the first quarter, than at any other period of the moon's age. The extremes of heat and cold occur less frequently between the new moon and the first quarter, than during the other parts of the period.

The reader may now inquire in what state is the question between the philosophers and the people? Does the moon exert the effect popularly insisted on? The labours of Arago have certainly caused some change in the view of the matter, for it appears extremely probable that *some* effect is produced by the moon on atmospheric phenomena. But on the other hand, the amount of this action is far too slight to produce the effects often attributed to the moon's influence. As to the prognostics which have been handed down from age to age for centuries, Arago shows that they are utterly valueless. Among them are the three following:—1. "If, when the moon is three days' old, the horns of the crescent appear clear and sharp, the sky will be serene during the whole of that month." 2. "If the upper horn of the crescent appears blackish in the evening, when the moon is about to set, we shall have rain during the wane of the moon; if it is the *lower* horn, there will be rain before full moon; if the *centre* of the crescent be blackish, the rain will come at full moon." 3. "If the moon, at four days' old, projects no shadow, expect bad weather." These prognostics, and many others of a similar kind, are from their very nature absurd, and ought to be utterly abandoned. The moon does appear to exert some influence on the weather, but not in such a way as to make these prognostics maintainable.

The way to knowledge by epitomes is too strait, by commentaries too much about.

ON WILHEM'S METHOD OF TEACHING SINGING.

ADAPTED TO ENGLISH USE, UNDER THE SANCTION OF THE COMMITTEE OF PRIVY COUNCIL ON EDUCATION,

BY JOHN HULLAH.

I.

A very notable change has taken place during the present century, in the mode of imparting instruction to large bodies of pupils. Formerly a master had to undergo the toil of instructing each pupil separately; and too often one pupil was idle or worse than idle while the master was attending to another. When Dr. Bell and Mr. Lancaster, the one in connection with the Established Church, and the other distinct from it, founded their respective schools for the instruction of the poor, they adopted the system of division into *classes*, by which many pupils could be instructed simultaneously, each class being superintended by a monitor or assistant teacher.

To trace the progress of these schools, and of others on a similar system, is no part of our plan. We shall at once proceed to our object, viz., to detail the remarkable and interesting attempt now being made to teach Vocal Music on a similar plan. An observant individual can hardly fail to have remarked the movement which English society has lately made in this direction:—Choral Societies, Sacred Harmonic Societies, and other associations for the practice of vocal music, have been formed in great number, and are largely attended by persons principally of the middle classes. When this circumstance became gradually known and appreciated by the benevolent persons who desire to impart the blessings of education to the poor, it became a subject for thought, whether vocal music might not aid in elevating the moral character of the people. In an official document, to which we shall more particularly allude presently, it is well observed that, —

Vocal Music, as a means of expression, is by no means an unimportant element in civilization. One of the chief characteristics of public worship ought to be the extent to which the congregation unite in those solemn psalms or prayer and praise, which, particularly in the Lutheran churches of Germany and Holland, appear the utterance of one harmonious voice. One of the chief means of diffusing through the people national sentiments is afforded by songs which embody and express the hopes of industry and the comforts and contentment of household life; and which preserve for the peasant the traditions of his country's triumphs, and inspire him with confidence in her greatness and strength.

It is still more important to remark, that the degrading habits of intoxication which at one time characterized the poorer classes of Germany are most remarkably diminished since the art of singing has become almost as common in that country as the power of speech; and this improvement is in great part attributed to the excellent elementary schools of Germany.

The reader is probably aware, that a few years ago a portion of Her Majesty's privy councillors were appointed as a "Committee of the Privy Council on Education." The office of this Committee is to superintend certain arrangements arising out of an annual parliamentary grant for educational purposes; and their attention was after a time directed to the subject of vocal music in schools. The secretary to the Committee was empowered to make such inquiries both in foreign countries and in England, as would enable the Committee to form some plan of proceeding. In the first place, it was necessary to ascertain how far singing had been carried in our elementary schools, how far the national taste seemed to lead that way, and whether there are any obstacles, in the way of "voice" or "ear," to the attainment of moderate musical skill among us. In a "prefatory Minute," subsequently published by the Council, it is stated that:—

The information derived from the inspectors of schools, and from various other sources, had made the Committee of

Council acquainted with the fact, that vocal music has been successfully cultivated in comparatively few of the elementary schools of Great Britain. In the Sunday schools of great towns the children have commonly been taught to sing, in an imperfect manner, certain of the psalm and hymn tunes used in divine service. These tunes are learned only by imitation, from persons of little or no musical skill, and are therefore generally sung incorrectly and without taste. Thus the children acquire no power of further self-instruction, and little or no desire to know more of music.

It is stated, however, in the same "Minute," that though vocal music has been comparatively neglected in the elementary schools of England, there is sufficient evidence that the natural genius of the people would reward a careful cultivation. It is stated that in the northern counties of England, choral singing has long formed the chief rational amusement of the manufacturing population. The weavers of Lancashire and Yorkshire have been famed for their acquaintance with the great works of Handel and Haydn, with the part-music of the old English school, and with the old English melodies. In respect of "voice," and "ear for music," we shall have to offer a few remarks hereafter.

The Committee, being convinced that there was no vocal music, worthy of the name, practised in any of our elementary schools; and that our labouring classes are capable of learning and appreciating the beauties of this delightful recreation; set about inquiring what mode of instruction could be most fittingly introduced into schools. They sent their secretary to collect, from various parts of Europe, where music has been cultivated in elementary schools, the books most frequently used in teaching music. Such works were accordingly procured from Switzerland, Holland, the German states, Prussia, Austria, and France: and were then carefully examined, with a view to determine their relative fitness for the proposed object.

It was desirable that such a work should proceed by easy gradations, beginning with the simplest details, and progressing by degrees to those more difficult. The method of M. Wilhem, as pursued by that gentleman at Paris, seemed to the Committee the one most fitted for their purpose. M. Wilhem had instructed large numbers of persons in Paris on his plan, under the sanction of the Minister of Public Instruction, whose sanction also was extended to the work in which M. Wilhem's method is developed. The Committee of Council accordingly sent their secretary to France, accompanied by Mr. Hullah, a gentleman who had bestowed great attention on this subject. The report of those gentlemen being in every way satisfactory, Mr. Hullah was commissioned to prepare a "Manual," or Book of Instructions, which, while it adhered to the general principle of Wilhem's method, should be adapted to the particular wants of an English elementary school.

The general system pursued by M. Wilhem has been to instruct a certain number of monitors in Music, and then to give to each monitor the teaching of a small class of eight children. The Committee of Council thought it desirable, however, to adapt the system to the mode of instruction in one large class, as well as in sub-classes. In Paris, a body of 400 artisans are being instructed in the sub-class or monitorial method, one monitor being appointed to every eight learners, who assemble round a large printed tablet, on which some of the instructions are given. The Committee have caused similar tablets to be prepared for the English schools; and have further authorised the publication of Instruction Books, some adapted for the use of both master and scholar, and some for the scholars only.

While these measures were in progress, steps were taken for the establishment of a "Singing-School for Schoolmasters." It is plain that unless the master of an elementary school be competent to teach singing, and to make it part of the regular school-routine, the general introduction of singing into the school could hardly be accomplished. The Committee of Education, though they did not feel justified in applying any part of the parliamentary grant to this purpose, nevertheless gave their full sanction and approval to the plan. Some liberal friends to the cause of education subscribed sufficient funds to set the matter on foot; and at length, on the 1st of February, 1841, a "Singing-School for School-Masters" was opened at Exeter Hall, under the immediate superintendence of Mr. Hullah. The experiment was so novel, and the desired result so important, that it was seen to be necessary to make an extremely low charge for admission to the school; the students, who were confined to masters and teachers in elementary schools for the humble classes, were charged fifteen shillings for the complete course of sixty lessons. As it is a part of the plan that all the pupils should progress simultaneously, no new pupils could enter the class after it had commenced. To admit other applicants, therefore, another class was formed on the 2nd of March; and a third on the 22nd of March. All these classes belonged to the School for *School-Masters*, but as the object in view applies equally to both sexes, a "Singing-School for Schoolmistresses" was formed on the 24th of March, under precisely the same regulations as the others.

These four classes, thus established, continued their course of studies during the greater part of the past year; and much curiosity was excited to observe the degree of progress made by the pupils. On this point we shall have to speak hereafter; but it may here be observed, that at the conclusion of the course of study prescribed to the first class, another was formed to which admission could be gained by persons not belonging to the scholastic profession. At the present time, Exeter Hall is, three evenings in the week, the busy scene of a vocal discipline which would have excited no small surprise a few years ago.

We shall endeavour in a future number, to give some idea of Wilhem's method, and of the chief differences between it and the methods commonly followed. We here conclude, therefore, with an extract from the "Prefatory Minute of the Committee of Council on Education," prefixed to the work used in these schools*, explanatory of the sort of publications employed in the development of the system:—

The Committee of Council have now published only the first part of the Course of Instruction. This first part consists of *Exercises* and *School Songs*, printed in two forms, viz.: on tablets for the use of the monitorial drafts, [*i.e.*, sub-classes of eight pupils each, taught by a monitor,] and in a royal octavo edition for the use of schoolmasters and their assistants. It comprises those portions of a course of elementary instruction in vocal music, which a master of moderate skill may easily succeed in communicating to an ordinary elementary school. The music is all of a comparatively simple character; it is arranged in synthetic order, and words have been adapted to it, chiefly suitable to the use of children in elementary schools, and therefore to be denominated "*School Songs.*" The second part of the course will encounter some of the greater difficulties of the art, and will be adapted to the use of normal and training schools, and those classes of young men which it is desirable to form, in order to continue the cultivation of vocal music beyond the period when the children of the working classes ordinarily attend elementary schools. The words adapted to the music in this part of the course will chiefly be such as may inspire cheerful views of industry, and will be entitled "*Labour Songs.*" To this will succeed such religious music as it may be deemed desirable to furnish for the use of elementary schools.

* *Wilhem's Method of Teaching Singing, adapted to English use under the Superintendence of the Committee of Council on Education, by* JOHN HULLAH.—J. W. Parker, 1841.

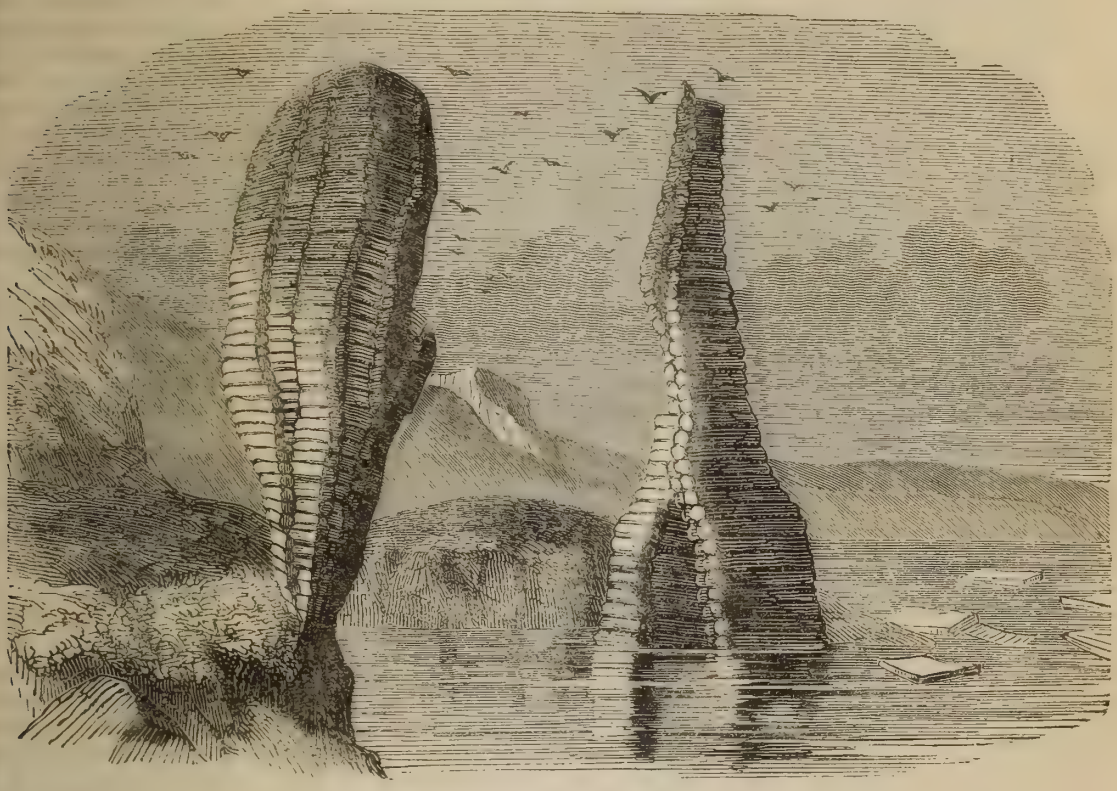
LONDON:
JOHN WILLIAM PARKER, WEST STRAND.
PUBLISHED IN WEEKLY NUMBERS, PRICE ONE PENNY, AND IN MONTHLY PARTS, PRICE SIXPENCE.
Sold by all Booksellers and Newsvenders in the Kingdom.

THE

Saturday Magazine.

No. 613. JANUARY, 22ND, 1842. { PRICE ONE PENNY,

ICELANDIC SKETCHES. II.



ON THE COAST NEAR STAPPEN.

2. GEOGRAPHICAL SKETCH (*concluded*). CLIMATE—METEOROLOGICAL PHENOMENA—NATURAL PRODUCTIONS.

ONE of the most characteristic features of Icelandic scenery is formed by the numerous fiords which find their way through the rocky barrier of the coast and run far into the interior. They are all very similar in form, but vary considerably in dimensions, some being scarcely two miles wide, but extending twenty-five or thirty miles into the country, and often continued much farther by narrow vales down which the mountain rivers escape to the sea. These fiords are separated from each other by lofty ridges stretching out into the ocean, and ending in precipitous headlands. Some of them attain an elevation of nearly 4000 feet, but the average height is about 2000 feet. The rise of these mountains is so sudden, that from the top of many a precipice 1000 feet high a stone may be cast into the sea. The perpendicular walls of rock which shut in the fiords, have their summits clothed with perpetual snow or wrapped in dark clouds.

All around seems dead,—no trace of life is visible. Man and all that he produces, vanish amid the mightier works of nature. Woods, and the higher classes of the vegetable creation, are entirely wanting, and the naked rocks are too steep for even the hardy birch or stunted willow to fix their roots. No sound is heard save the billows dashing on the craggy shore, no motion seen but the cataract rushing down the rugged cliffs*.

In the midst of this sublime scenery, the Icelander takes up his abode; for here he finds grassy meadows for his cattle, and the fiords offering a favourite retreat to the cod-fish, enable the fisherman to pursue his vocation with safety and convenience. The fiords also afford another advantage. they serve like canals to connect the interior of the island with the coast. Merchant-ships sail up them, supply the wants of the natives, and receive their produce in return.

The roads of Iceland are both difficult and dangerous: they are generally made on the ascent or descent of the lofty ridges which separate the fiords: many of them are seldom free from snow; and the traveller oppressed with heat on ascending the steep side of the hill shivers with cold on gaining the icy summit. Many of the tracks which cross these heights are better adapted to the chamois than to men and loaded horses; nevertheless, the horses find their way through the fearful ravines with remarkable sagacity, leaping from ledge to ledge, or sliding down amidst the crumbling fragments. But accidents do occur, and then the horse and his rider are hurled over the precipice, and meet with instant death. No wonder then that the passage by the fiords, where practicable, is preferred: when one boat will transport more goods than thirty horses could do along the miserable roads.

Many of the rivers of Iceland issue from glaciers, and are rendered white by particles of clay or pumice. Some of them are of great magnitude and rapidity, and present a singular appearance on issuing from beneath the snow, and bearing with them immense masses of ice. Their course is generally short.

The other rivers are too rapid to be navigable, and this rapidity often gives rise to noble waterfalls, or suc-

* *Edinburgh Cabinet Library.* Article, Iceland

cessions of cascades; and often where the snow is screened from the sun it is formed into fantastic arches, through which the dark waters pursue their troubled course.

The broken surface of the island does not present many hollows for the formation of lakes; but there are a few, of which the Myvatn in the north is the most remarkable. It has been named from the swarms of mosquitoes which abound on its shores. Its greatest length is seven miles, and its circumference about twenty: the stony floods which the neighbouring volcanoes have from time to time poured into it have greatly diminished its depth. Numerous hot springs issue from its bed and fill the air with steam: and yet trout are abundant in its waters, and are considered the finest in the island. Flocks of water-fowl inhabit its banks and the isles of lava which spot its surface: these also are the favourite breeding places of the eider duck, whose delicate down is a valuable article of traffic among the islanders.

Iceland has always been celebrated for its boiling springs, among which the Geysers are best known. The waters of these springs, maintained at a high temperature by volcanic heat, contain silica, which is held in solution by soda: they are most probably contained in subterranean cavities, which communicate with the surface by means of a pipe: a portion of the water is converted into steam, the elastic force of which throws up a column of the water, sometimes to the height of more than 100 feet, with a noise that seems to shake the surrounding country. In some cases the jet of water is constant, in others at regular intervals, and in a third class irregularly; but most of them deposit a silicious matter which forms the basin of the spring and the descending pipe. This deposit finally destroys the springs by closing up the pipe; and the water probably forces a new opening for its egress: thus giving rise to a new spring. They occur in all parts of the island, and frequently send up boiling water amidst fields of perpetual ice. Even the ocean is affected by them, and in many places its waters are heated by their action, and cause much injury to the nets of the fishermen. These remarkable formations having been already noticed in our First Volume, (p. 25,) a more particular detail is unnecessary here.

The climate of this island resembles the stern and rugged features of its surface. Winter follows so closely on summer that the other two seasons can scarcely to be said to exist. The natives reckon their summer from the Thursday between the 18th and 24th of April, and their winter from the Friday between the same days of October; but it often happens that the cold of winter penetrates far into the summer, so that even in June the fiords present roads of ice over which both man and horse may safely pass. The cold of winter is variable, but very severe; and it has been remarked that the coldest winters throughout Europe are the mildest in Iceland and Greenland. The longest day in the south of the island is 20 hours, and in the north, more than 23½: while from May to September there is no night. The sun is not seen at the winter solstice; but the refracted rays give a full light. In the height of summer the sun appears always above the horizon, but although so long visible, the rays, on account of their obliquity, produce but little heat. During the long nights of winter the whiteness of the snow, which reflects the light of the moon and stars, together with the brilliant fires of the aurora, serve to illuminate this dreary land.

In common with other islands, the weather here is very fitful; seldom remaining settled for two or three days. Violent winds are more injurious to vegetation than extreme cold; because they tear off the green covering from the earth, loosen masses of rock, and hurl them into the valleys, and sometimes waft such quantities of sand and ashes from the central districts as to darken the sky and destroy the pastures in the north. But the winds have also their advantages: they dispel those dense fogs that hover over the land and deprive it of the blessings of a bright sun and a blue sky. Rain and hail are frequent. Thunder is seldom heard; lightning is more common and often fatal, especially near volcanic mountains. Sometimes in a winter's night, during a strong wind and drifting snow, the whole sky is illuminated, as if on fire, by a continual lightning which moves slowly. This phenomenon causes much dread to the natives, because it frightens their cattle, many of which fall over the rocks in running about to avoid the apparent danger. The *Aurora Borealis* is also seen in great beauty; sometimes covering the sky with yellow, green, and purple light, which reflected by the snow has a fine effect. Solar and lunar halos, mock suns, and shooting-stars, are also very common.

In such a climate as this, where, instead of soft and refreshing showers, the atmosphere deposits its superabundant moisture in the form of snow or ice, vegetables and animals are few in number and diminutive in growth. There are several varieties of moss and lichen: the thickets of birch and willow are of stunted growth: grasses are abundant in many parts: corn was once cultivated, but the inhabitants find it more to their interest to attend to the rearing of cattle, so that the great harvest of Iceland is hay. In the vicinity of the hot springs many plants grow to an unnatural size under the influence of constant warmth and moisture: a species of *Chara* has been found flowering and bearing seeds in a spring, the water of which was hot enough to boil an egg in four minutes.

Two species of fox, the white and the blue, are known in Iceland. The large white or polar bear is an occasional visitant floating on an icy raft from Greenland, he attacks the cattle and commits great havoc unless speedily destroyed by the inhabitants. A white species of mouse is mentioned by Olafsen, as being found in considerable numbers in the woods, where it collects nuts for winter's provision. In their excursions for berries, these little animals have often to cross rivers, over which on their return they are said to convey their booty by the following ingenious contrivance:—the party of from six to eight select a flat piece of dry cow-dung, in the middle of which they place the berries in a heap, and, after launching it, embark upon it with their heads joined in the midlle, and their tails pendant, like rudders in the stream. In this manner the passage is accomplished, though the unstable bark is often wrecked, when the navigators must save themselves by swimming and lose their whole cargo. The ingenuity of this account has caused it to be doubted; but it has been confirmed by Henderson.

Six or seven kinds of seal are known in Iceland: they are of great importance to the natives, on account of their flesh and oil, while their skins are used for clothing and form an article of export. Those animals are easily tamed, and soon become attached to their keeper. Their body is long and conical: their feet, enveloped in the skin, appear like fins. They are very inquisitive animals, and are attracted often to their destruction, by any new object. They will follow a boat for a long time, apparently wondering at the strange sight: and they are frequently enticed far inland by the light of some cottage window. The morse or walrus occasionally visits Iceland. On the coast are found whales, the white fish, the dolphin, the porpoise, the fierce grampus, and the sea unicorn. The last named animal has no teeth, but instead of them a single tusk, wreathed in a spiral groove, and directed forwards. The length of this tusk is eight or ten feet; it is very hard and surpasses ivory in its qualities: it forms a valuable article of export, and was formerly sold at an exorbitant price, as the horn of the fabulous land unicorn. Both the flesh and the skin of this animal furnish food to the natives.

The winged tribes are somewhat numerous in Iceland; but many of them are migratory and are found widely diffused over the northern regions. Our space will not

allow us to mention more than one of the winged visitors to this dreary island; and we select the wild or whistling swan. This noble bird is five feet long; and, when the wings are extended, eight feet broad: its plumage is pure white, slightly tinged on the head with orange yellow. It sometimes remains all the winter in Iceland; and during the long dark nights is heard the wild song of troops of these birds as they pass from place to place. This song is thought to be a kind of signal or watchword, to prevent the dispersion of the party, and is described as remarkably pleasant, resembling the tones of a violin, though somewhat higher, each note occurring after a distinct interval. This midnight music is said to precede a thaw, and hence the Icelanders are well pleased to hear it. In summer these birds abound in many of the lakes, rivers, marshes, and small ponds: here they lay their eggs in spring and the natives go in search of them; and in August, when the old birds moult and the young cannot yet fly, many persons go to collect the feathers and catch the birds. The flesh, which is dry and tough, is eaten, but the quills and skins are valuable articles of export.

The inclemency of an Icelandic winter is often increased by the vast shoals of ice which the waves bear from Greenland to its shores; but the same cause which produces this disadvantage brings also a compensation for many privations: every year vast heaps of drift wood are cast ashore sufficient to supply the natives with fuel and building material.

This timber appears to come from two directions, the current from the northern coast of Asia bringing it from the east, and the American or Mexican gulf stream from the south-west. Owing to the general course of these, it is found in greatest quantities on the north-western side. The fiords in Strande Syssel enjoy it in most abundance, and in many of them it is seen piled up several yards thick, partly covered with sand or wild plants, and is often quite fresh. Trees with their bark and roots are also very commonly found in good condition, having, from being enveloped in ice, either before or soon after they fell into the water, been preserved from injury and waste. The wood on the north-western coast consists of the pine, Scotch fir, lime-tree, birch, willow, mahogany, Campeachy wood, and the cork-tree; on the east are found Scotch fir, silver fir, birch, willow, and juniper; on the coast near Langanes, the Scotch and silver fir prevail. Associated with these come dead whales and seals, which are a great prize to the poor inhabitants. These have probably been killed by the icebergs, which move faster than a boat can row, and, when dashing together, sometimes by their friction set fire to the wood contained in them.

THERE are a thousand objects, such as quills, reeds, the grasses, &c., which show that strength is uniformly given by Nature, with the least possible expense of material. It was this fact to which Galileo appealed, when he was arraigned before the inquisition on the charge of atheism. If, said he, there were nothing else in nature to teach me the existence of a Deity, even this straw would be sufficient. Such a straw, if made solid, and yet of the same quantity of material, would be so thin, that it would bend and break under the slighest weight; whereas, in its present form, it is able to support an ear, which is heavier than the whole stalk.—DR. POTTER.

THAT ignorance of our future destiny in life, of which we sometimes complain, is a signal proof of the goodness of our Creator. He hides from us the view of futurity, because the view would be dangerous and overpowering. It would either dispirit us with visions of terror, or intoxicate us by the disclosure of success. The veil which covers from our sight the events of this and of succeeeding years, is a veil woven by the hand of mercy. Our "times are in his hand," and we have reason to be glad that in his hand they are kept, shut out from our view. Submit to his pleasure as an Almighty Ruler we must; because we cannot resist Him: equal reason there is for trusting in Him as a guardian under whose disposal we are safe.—BLAIR.

THE BRANDY PEST.

No. II.

An Accident.

ABOUT three miles from the inn where we dined, the road passed over a hill, and led to a village at the foot of it. As we were descending this hill, our postilion madly whipped on the horses, and our carriage was suddenly overturned. We reached the ground unhurt, but the postilion fell with great violence; fortunately the horses were soon stopped, by some villagers, who helped us out of the carriage. The postilion, bleeding and senseless, was conveyed to an inn, where we made up our minds to stop also.

"I expected this," said Fridolin, on the way to the inn; "the fellow drank too much at the place where we dined. He is intoxicated: his glowing red face, and his swearing, showed it evidently."

About a quarter of an hour passed before the postilion recovered his consciousness. Fridolin examined and treated him with great care. The poor fellow had broken a rib and his left arm, and his face was much bruised.

This accident obliged us to remain at the inn until the carriage was repaired, and in the evening we enjoyed the company of some officers, and other respectable people of the village. We were in our dear Switzerland. The company talked much about the existing institutions and governments. They all approved of them, with the exception of the landlord, who interrupted them often, saying, "It is really too bad of our governments to allow the increase of ale-houses and brandy-shops, by which the dissoluteness of the country increases. In some of our towns every fifth house is an inn or an ale-house. Here in our small village, with scarcely six hundred inhabitants, there are seven public-houses, which are full of guests every evening."

There is sometimes in the life of a man, a time, a day, in which, by a remarkable coincidence of circumstances, the same thing occurs more than once, or in which several events happen that appear to have the same bearing. We ought to pay more than usual attention to circumstances thus pressed upon our notice by repetition, for in such coincidences the willing observer may discern the warning or encouraging voice of Providence.

Such was the case with me. Dr. Walter's description of the dangers of brandy-drinking, the letters by which I had learnt the dreadful consequences of this bad habit, the danger to which our lives had been exposed, through the intoxication of our postilion—all this, happening in one day, made a deep impression upon me, and confirmed me in my resolution to give up drinking spirits for ever.

But this day had yet other consequences upon my future life.

A Conversation such as is seldom heard in an Inn.

"It is jealousy of trade, landlord, jealousy of trade, that makes you speak thus!" cried one of the guests, laughing.

"No, sir," answered the landlord, "I do not speak from selfishness, I feel compassion for the poor people. Every year they become more dissolute and disorderly on account of the increase of public-houses; for the more numerous the opportunities of seduction, the more numerous are the seduced; the more public-houses, the more drunkards. Read the newspapers! I have noticed many things in them. In the canton of Berne, for instance, five years ago, there were already more than 900 public-houses: there are now more than 1500. Five years ago, I tell you, three to four million gallons of wine, and about 248,000 gallons of brandy, were imported into the same canton. You think this is a great deal; but now nearly 7,000,000 gallons of wine, and about 500,000 gallons of brandy, are consumed! Besides this, many persons make brandy for their own use out of the husks of pressed grapes, apples, or pears, or out of potatoes. Many persons drink brandy in the morning before breakfast, at noon, and again in the evening. Even boys drink ardent spirits. The same is the case in the cantons of Freiburg, Solothurn, Aargau, Zürich, and others. Once the canton of Basel-Landschaft sold an immense quantity of cherry-brandy to France. Though that commerce is now at an end, still the distilling of the brandy continues. What do the peasants of Basel do with it? They consume *themselves* the whole quantity every year."

"It is jealousy of trade, landlord, nothing but jealousy

of trade," repeated the same merry guest; "you exaggerate, it is not half so bad as you say."

An old gentleman, who sat opposite to him, raised his voice, and spoke thus, very seriously: "The evil is worse than you think, or perhaps, know. Have you not been yourself a witness of the accident that happened to these gentlemen, caused by the intoxication of their postilion? Such accidents, owing to drunkenness, are not at all rare in our days. Where is there a village or a town in the country, where you do not meet with drunkards reeling through the streets, quarrelling, fighting, and even killing each other? How many fires are occasioned by the carelessness or thoughtlessness of intoxicated persons! The poverty of the lower classes increases strikingly with the increased use of wine, ale, or brandy. Debauchery, idleness, and thieving, become more frequent every year. The parish is overburdened with orphans and deserted children. If an epidemic disease breaks out, all is misery and destruction, in spite of the great number of physicians. People die like flies, for they are ripe for the grave through their daily use of spirits. The government know all this; they see it every day, and yet do nothing against it. Instead of stopping the source of the evil they dig ponds and lakes to receive its victims. They build immense workhouses, hospitals, and houses of correction, and fill them with drunkards; but they do not reflect upon the origin of all this misery. They give licences for ale-houses and brandy-shops, and so let misery run unbridled over the country."

While he thus spoke, the other guests were all attentively silent. The landlord nodded his approbation, and said: "It is but too true, your worship!" (for the speaker was a justice of the peace.)

No one had listened with greater attention than Fridolin. "I have been absent more than four years," said he, "and I am both astonished and grieved to hear such facts. No corruption, debauchery, nor licentiousness, ought ever to be heard of in Switzerland. And yet, gentlemen, what else is the cause of the misery and infamy of our country, but the avidity and covetousness of the dealers in ardent spirits, who thus distribute *poison* through the whole country."

Our landlord shook his head and replied: "By your leave, sir, I will agree, that the greediness for gain of the retailers of spirits contributes much to the misery and impoverishment of families and parishes. But if you call brandy a poison, the band of poisoners is much larger than that of landlords, alehouse-keepers, and dealers. I will not say anything more. It is more becoming for your worship to speak than for me."

He addressed these last words to the old gentleman who had spoken before. Fridolin, too, turned towards the justice of the peace and requested him to explain, how it came to pass that brandy, in the course of these twenty years, had become such a common, and indeed, unfortunately, such a daily beverage.

The Speech of an old Justice of the Peace, worthy of every one's attention.

"Do not wonder at it," said he; "it is not the fault either of the revolution, or of the foreign soldiers who came into our country, or of that licentiousness of the people which is occasioned by war. Neither is the number of inns and taverns the cause of the increase of brandy-drinking. Were all the inns and taverns to be abolished, the number of brandy-drinkers would not diminish. The chief cause is the cheapness of brandy, and the facility of preparing it. It is prepared, in distilleries and in private houses, out of the husks of grapes and fruit, out of potatoes, cherries, plums, gentian, wheat, rye, and barley; almost everything can be used to make that liquor, which, as that gentleman said, *empoisons* by degrees and imperceptibly, the health of human beings.

"But our landlord is quite in the right when he says that the band of poisoners consists not alone of brandy-distillers and of the dealers in that poison. There are other persons besides, who seduce the ignorant people to brandy-drinking; who destroy the health of men, women and children; who promote poverty and licentiousness; who fill the prisons, the mad-houses, the hospitals, the houses of correction, with miserable victims; and these are—the wealthy, the respectable, the so-called well-educated people. They set before their guests strong wines, spirits before and after dinner, spirits at supper. Every friend or stranger who comes to them is encouraged and incited to drink. There are amongst the rich and fashionable class as many brandy-drinkers as amongst the poor and the peasantry; therefore we see so many sickly, weak persons amongst them, who have the physician constantly in their house, and whose children are weak and degenerate. But these so-called well-educated people dispense brandy also amongst the lower people. They give it to their labourers; they give it to their threshers and hay-makers; they give it to their washerwomen; they offer it to those who bring them their rents; and, in short, they take advantage of every opportunity to make people drink. They imagine, perhaps, in their ignorance, that by this means they give more pleasure and strength to their labourers. Yes, it is true, in the first hour the brandy excites their spirits, they work merrily; but, in the following hours, faintness, debility, indolence, and sleep overcome them. It is a fact, that out of two equally strong labourers, he who abstains from brandy works better, and with more prudence and reflection than he who takes it. The latter is like a traveller, who, in the beginning, runs fast, and leaves others behind him, but soon he becomes tired, and must remain behind those who walk steadily."

A little man, who had the appearance of a wealthy farmer, interrupted the justice of the peace in his speech, and said: "Right! right! I know it well. Four sober labourers, who quench their thirst with water and milk, work more in a day than five brandy-drinkers. I allow no brandy on my farm; and I am very well without it. A brandy-drinker saves no money either for himself or for his family."

The justice of the peace resumed: "I know, neighbour, that you have dismissed every one who is fond of brandy, and you have derived advantage from so doing. No liquor is to be found in your house. Oh may all honest persons, all intelligent and true friends of the people, imitate your example! But if wealthy families, manufacturers, officers, even magistrates and teachers, offer to their children, to their workmen, to their pupils, the bad example of spirit-drinking, what can we expect from the common people? Yes, they are the poisoners of the community; they are the mischief-makers! And, what is worse, gentlemen, the very men to whom we intrust the superintendence of the public welfare, contribute, by their ignorance or their thoughtlessness, to the diffusion of all those evils, vices, and crimes which originate in the daily use of strong liquors in our deplorable country; of poverty and gambling, of lust and dissipation, of theft and fighting, of weakness in offspring, and of all sorts of diseases. Some of our clergymen preach on the decay of religion, lament over the increasing immorality; but they have not yet destroyed the secret source of vice, namely, the daily use of fermented and distilled drinks. Indeed, it is not enough to preach, to lament, and to admonish. Do we not, in this wretched brandy-drinking country of ours, often see unworthy priests who are drunkards? do we not see even the teachers of youth and professors addicted to drinking, and exposing themselves to the scorn and derision of their scholars? But, gentlemen, the vice has become already so general amongst us, that it is no more regarded as a vice; it is hardly regarded as a weakness; has it not become a proverb to say, 'To be tipsy honourably shall be prohibited by nobody?' Our doctors ought to take care of the health of the people. They ought to be the first, if they were conscientious, benevolent men, to warn the community of the abuse of strong liquors; and, I repeat it, daily use is an abuse. They best know to how many bodily diseases this daily use leads. They know how many diseases are developed by the poison of brandy; but some of our doctors, I really believe, have more anxiety to get patients than to preserve the health of the people; they do not warn us; they do not prohibit the liquors so advantageous for themselves, in the houses which they frequent; at least not in the houses of the rich. Is this carelessness, or avarice? And, gentlemen, what shall I say of our governors and legislators, amongst whom there are drunkards, and dealers in poisonous spirits? I will not speak of magistrates, who, when they have taken a glass too much, often commit cruelty and injustice.

"Finally, let me call your attention to the perverse, immoral institutions and laws of our country; they permit dancing on four or five Sundays during the year, but limit this abuse, from a pretended regard to public morals, while they openly countenance, if they do not actually encourage, drinking on every Sunday throughout the year. Instead of making brandy dear by taxes and tolls, they charge more for the mild wines, which are much less obnoxious, and thus drive the poorer people to the use of spirits. Thus our governors and rulers favour the poisoning of the people, and the ruin of their health and morality. Yes, gentlemen, these persons call themselves the fathers of their country,

the friends of the people, and yet they make more widows and orphans, more cripples and sickly persons, more suicides and madmen, than perhaps a war would have made."

When the speaker was silent, the landlord exclaimed, "Go on! that is all truth, and no exaggeration."

"Well," said the magistrate, "why repeat what you yourself have said? By brandy-drinking men become frivolous, spendthrifts, lazy, poor, and shameless. Then arise complaints of the deficiency of good poor-houses. But who has promoted the poverty? The legislature! Poverty and intemperance render tenfold the number of offenders against the law—thieves, swindlers, and other offenders. We find few criminals who do not embolden themselves by a dram, before committing their crimes. The highwayman and the thief, before undertaking an enterprise, swallow a dram. In judicial examinations hitherto, this has been too little inquired into. But question each man in the prisons and houses of correction, and you will find more than half of them to be brandy-drinkers. And then we complain that the houses of correction become too small for the number of offenders! Who, then, is answerable for the increase of offences and of criminals? The *lawmakers* are the first cause of the public corruption. But no more on that head."

Then a gentleman in a black dress rose, to whom the title of counsellor had been given during the evening. He said, "Your worship has forgotten one thing! We have a law which *favours drunkards* more than sober people. By this law it is ordained that the drunkenness of a criminal shall be considered in *mitigation of punishment*, because not being master of his reason, he cannot be made entirely answerable for his offence. But is it not a crime in the first place for a man to confuse his reason, to contaminate his human dignity, and to lower himself down to a brute? In England and in North America they understand legislation better. There the previous stupefaction of the mind, by means of heating liquors, is not considered a reason for the mitigation of the punishment, but all offences committed in drunkenness are punished as if perpetrated in a state of sobriety. Every one can avoid placing himself in a state in which he no longer knows what serious consequences he hazards, but it takes a long time before we in Switzerland arrive to the perception of the simplest truth. He who is sober knows, that when he is in a state of intoxication, he cannot one minute answer for his actions in the next; that he cannot warrant whether or not the next hour will find him guilty of treachery, of adultery, of murder, of having ruined his fortune through gambling, and plunged his whole family into the deepest pitch of misery! The demon of brandy opens before him the broad path of crime and misery, it drags him laughing to infamy, to prison, to the convict's chains, to the scaffold! When sober, he knows very well that all this may happen to him as soon as he loses his reason by getting drunk, and yet he drinks, and drinks, till he has lost it! He commits a crime, and now intoxication is made the ground of a milder punishment for him than for the sober!"

This conversation, which caused much debate, lasted till late at night, and was not finished when I and my friend Dr. Walter went to bed.

ON VISITING MELROSE ABBEY AFTER AN ABSENCE OF SIXTEEN YEARS.

Yon setting sun, that slowly disappears,
Gleams a memento of departed years:
Aye, many a year is gone, and many a friend,
Since here I saw the Autumn sun descend.
Ah! one is gone, whose hand was lock'd in mine,
In this that traces now the sorrowing line;
And now alone, I scan the mouldering tombs,
Alone I wander through the vaulted glooms,
And list, as if the echoes might retain
One ling'ring cadence of her varied strain.
Alas! I heard that melting voice decay,
Heard seraph tones in whispers die away;
I mark'd the tear presageful fill her eye,
And quivering speak, I am resigned to die.
Ye stars, that through the fretted windows shed
A glimmering beam athwart the mighty dead,
Say to what sphere her sainted spirit flew,
That thither I may turn my longing view,
And wish, and hope, some tedious seasons o'er,
To join a long lost friend, and part no more.

SIR MATTHEW HALE. I.

Immortal Hale! for deep discernment praised,
And sound integrity, not more than famed
For sanctity of manners undefiled.—Cowper

When the venerable and learned Bishop Burnet undertook to write the life of Sir Matthew Hale, he stated the following reasons, among others, which incited him to the task.

In the age in which we live, religion and virtue have been proposed and defended with such advantages, with that great force of reason, and those persuasions, that they can hardly be matched in former times; yet after all this, there are but few much wrought on by them, which, perhaps, flows from this, among other reasons, that there are not so many excellent patterns set out, as might, both in a shorter and more effectual manner, recommend that to the world which discourses do but coldly: the wit and style of the writers being more considered than the argument which they handle, and therefore the proposing virtue and religion in such a model, may perhaps, operate more than the perspective of it can do; and for the history of learning, nothing does so preserve and improve it, as the writing the lives of those who have been eminent in it.

The subject of our present memoir was born on the 1st of November, 1609, at Alderley, in Gloucestershire. His father had been educated for the bar, but he "gave over the practice of the law, because he could not understand the reason of giving colour in pleading, which, as he thought, was to tell a lie." In his infancy Matthew lost both his parents, and was brought up under the directions of a kinsman, who being attached to the doctrines of the Puritans, placed Matthew under the care of teachers holding similar opinions; and thus were probably founded those strict principles of thought and action, which afterwards distinguished him. At the age of seventeen he became a student of Magdalen Hall, Oxford, where he was remarkable, as at school, for proficiency in his studies. He did not, however, escape the temptations to which a young and ardent mind is likely to be exposed in so public a place as a university. He rejected the precise habiliments of the Puritan for more fashionable attire: he preferred the theatre to the retirement of his study: and the lessons of a fencing-master to the lectures of his tutor: and so strongly was he enamoured with martial exercises, that when his tutor was about to depart for the Low Countries as chaplain

to Lord Vere, young Hale resolved to accompany him, in order "to trail a pike in the Prince of Orange's army."

But he was happily deterred from gratifying this warlike freak by one of those events called *accidents*, but which should rather be regarded as Providential *means* and *opportunities* of escaping temptation, or turning from an evil way. Young Hale was engaged in a lawsuit relative to his property, and was induced to visit London to attend to it. Having retained Serjeant Granville, he became acquainted with that learned man, who soon remarked the many valuable qualities of his client, and succeeded in persuading him to relinquish all idea of the military service, and devote his powers to the study of the law. In November, 1629, he was admitted a student of Lincoln's Inn. The ardour with which he had so latterly pursued pleasure, was now directed to his studies, to which he applied such method and industry, as could not fail to command success. He assumed a sober, student-like dress, and for some years devoted sixteen hours each day to study. But, notwithstanding this change, the love of convivial society was a temptation strong within him, to which he sometimes yielded, til an *event* occurred, which powerfully affected him. Being present at a party where wine was drunk to excess, one of the company became insensible, and the most serious apprehensions were entertained for his life. Hale was so much affected by this event, that he retired into another room, fell upon his knees, and prayed earnestly to God that his friend might recover, and that he himself might be pardoned for having participated in such excesses. At the same time he made a vow never more to be guilty of similar intemperance, nor again while he lived, to drink a health. Most persons under the influence of some powerful and painful mental impression, are ready to make good resolutions:—but there is too often this difference between Matthew Hale and them—he kept his during the rest of his life—they forget their's when time has weakened the impression, or new pleasures have effaced it. Happy would it be for us, if, adopting the maxim of an old writer, *we would do when we are well, what we so often resolve to do when we are ill!*

It was probably under the influence of these good resolutions that Hale composed the scheme of daily employments, which we insert below*. May we hope that every reader will carefully study it, and, if possible, adopt it for his own use. The early impressions of Hale now returned with full force, and, (like young persons generally, apt to fall into extremes,) he became so austere as to neglect his personal appearance, so much so, that being impressed as a fit person to serve his majesty, he was only released by being recognised by a passing acquaintance.

The zeal and ability of Hale attracted the notice of Noy, the Attorney-General, who undertook to direct his studies, and interested himself so warmly in his progress, that Hale was distinguished amongst his fellow-students by the name of Young Noy. Under such patronage Hale soon became known: his merits also procured him the friendship of the learned Selden, and John Vaughan, afterwards Chief Justice of the Court of Common Pleas. Hale was peculiarly struck with the varied acquirements and instructive conversation of Selden, and by his example was induced to extend his own studies to literature and science. His posthumous works show the diligence with which he pursued mathematics and natural philosophy. He also devoted considerable attention to the study of medicine, anatomy, ancient history, and chronology; but his principal delight was in the study of divinity, to which he was probably led by early associations. All these pursuits, any one of which would suffice to occupy the working-hours of an ordinary mind, Hale called his diversions, with which he refreshed himself from the fatigues of professional studies.

Like many men of ardent genius, (says Mr. Roscoe,) he possessed the valuable faculty of applying the powers of his strong and active mind to various subjects, without that distraction of thought, to which persons of inferior capacity are subject. His indefatigable industry also enabled him to accomplish tasks which, to the indolent, would seem incredible. He rose early in the morning, and as he sacrificed no portion of the day to idle society, nor even indulged in any useless correspondence by letter, he found leisure to apply to his various literary pursuits without injury to his professional prospects. His temperance also was highly favourable to mental occupations; and so sparing was he in his diet, that his meals never prevented him from immediately resuming the labours which they had interrupted. It is, perhaps, to the variety of studies in which Hale engaged, that his extensive learning is to be attributed. A complete change in the nature of the objects upon which the mind is engaged, is almost equivalent to repose, and is, perhaps, equally salutary to the mental health.

At the time when Hale was called to the bar, the civil dissensions which were beginning to harass the country, made it "no easy thing for a man to preserve his integrity and to live securely:" he resolved, however, to take no part in the political contests of the times. The only interest which he displayed in public affairs, was in relieving the distresses of both parties.

The strict neutrality thus professed by Hale, at a period when so much was at stake on both sides, is not a subject for applause. When the violent and the indiscreet of all parties are roused to action, it does not become the moderate and sensible portion of society to remain unmoved, and to preserve their individual repose, at the expense of the tranquillity of the state. At a later period of his life, Hale appears to have been sensible of this error, and exerted the influence which his high character gave him, in endeavouring to place the liberties of his country upon a sure foundation.

This political neutrality and the esteem in which he was held by both parties, made him a desirable advocate to those of the prerogative party, who were tried for political offences. In many of the great state trials of the period, he appeared as counsel, and on one of these occasions on being threatened by the attorney-general for appearing against the government, he replied, "that he was pleading in defence of those laws, which they declared they would maintain and preserve, and he was doing his duty to his client, so that he was not to be daunted with threatenings."

After the execution of Charles I. several of the judges resigned their seats, and one of the vacancies in the Court of Common Pleas was offered to Hale, as it is supposed, from a desire of Cromwell to remove from the bar a man whose honest and resolute character might

* MORNING.—I. To lift up the heart to God, in thankfulness for renewing my life.

II. To renew my covenant with God in Christ; 1. By renewed acts of faith, receiving Christ, and rejoicing in the height of that relation. 2. Resolution of being one of his people, doing him allegiance.

III. Adoration and Prayer.

IV. Setting a watch over my own infirmities and passions, over the snares laid in our way. *Perimus licitis.*

DAY EMPLOYMENT.—There must be an employment—two kinds:—

I. Our ordinary calling, to serve God in it. It is a service to Christ, though never so mean. *Coloss.* iii. Here, Faithfulness, Diligence, Cheerfulness. Not to overlay myself with more business than I can bear.

II. Our spiritual employments. Mingle somewhat of God's immediate service in this day.

REFRESHMENTS.—I. Meat and drink, moderation, seasoned with somewhat of God.

II. Recreations: 1. Not our business. 2. Suitable. No games, if given to covetousness or passion.

IN ALONE.—I. Beware of wandering, vain, lustful thoughts; fly from thyself, rather than entertain these.

II. Let thy solitary thoughts be profitable; view the evidences of thy salvation, the state of thy soul, the coming of Christ, thy own mortality, it will make thee humble and watchful.

COMPANY.—Do good to them. Use God's name reverently. Beware of leaving an ill impression of ill example. Receive good from them, if [illegible] leaving.

EVENING.—Cast up the accounts of the day. If aught amiss, beg pardon. Gather resolution of more vigilance. If well, bless the mercy and grace of God that hath supported thee.

The above notes were copied by Bishop Burnet from the M.SS. of Hale "in the same simplicity in which he writ it for his own private use." "These notes have an imperfection in the wording of them, which shows that they were only intended for his privacies."

prove injurious to his service. He hesitated to accept the proffered dignity: his practice was considerable, and he had doubts as to the propriety of acting under a commission from the existing government; but having satisfied his scruples by conversing with two eminent divines he came to the resolution, "that as it was absolutely necessary to have justice and property kept up at all times, it was no sin to take a commission from usurpers."

Some time after he had exercised his judicial functions, he began to entertain doubts with regard to the lawfulness of presiding at the trial of criminals, on the ground that the government which granted his commission had no right to inflict punishment. He accordingly refused to sit on the crown side at the assizes. This resolve was probably not unpleasing to the government, since the judge had on more than one occasion displayed a stern determination to favour justice rather than the wishes of those in power. Soon after he was raised to the bench two soldiers were tried before him under the following circumstances. An inhabitant of Lincoln, who had been one of the royal party, walking in the fields with a fowling piece in his hands, was met by one of the soldiers, who informed him that the Protector had ordered that none of the King's party should carry arms, and then attempted to force away the weapon. The man resisted, and throwing the soldier down, beat him and left him. The soldier having met one of his comrades, prevailed upon him to accompany him for the purpose of taking revenge. They accordingly watched for the man, and on his approach the soldier again demanded the fowling-piece, and while they were again struggling for its possession, the other soldier, coming behind the man, pierced him with his sword. For this act the men were tried; one of them was found guilty of manslaughter, and the other of murder. At the trial, Colonel Whaley, who was in command of the garrison, came into court, and addressing the bench, urged that the man was killed for disobeying the Protector's orders, and that the soldier had done his duty. The judge, however, was neither convinced by the colonel's arguments nor daunted by his threats; and passing judgment on the prisoner, ordered him for immediate execution, lest a reprieve should be granted. In this, however, he certainly exceeded the bounds of his duty as a judge. Upon another occasion, Hale also displayed a remarkable degree of moral courage and a love of justice. On being informed that the Protector had ordered a jury to be returned to try a cause in which he was particularly interested, the judge called upon the sheriff to explain the matter. The sheriff knew nothing about it, but referred to the undersheriff, who admitted that the jury had been returned by an order from Cromwell. Hale, having pointed out the statute which directs that every jury shall be returned by the sheriff or his lawful officer, dismissed the jury and refused to try the cause. On his return from the circuit the Protector expressed his displeasure at the conduct of Hale, and told him angrily that he was not fit to be a judge: to which Hale mildly replied "it was very true."

Expectation prepareth applause with the weak, and prejudice with the stronger judgment.—The fashion of commending our friend's abilities before they come to trial, sometimes takes good effect with the common sort, who, building their belief on authority, strive to follow the conceit of their betters; but usually amongst men of independent judgments, this bespeaking of opinion breeds a purpose of stricter examination, and, if the report be answered, procures only a bare acknowledgment; whereas, if nothing be proclaimed or promised, they are perhaps content to signify their own skill in testifying another's desert. Otherwise, great wits, jealous of their credit, are ready to suppress worth in others to the advancing of their own; or, if more ingenuous, to be no further just than to forbear detraction: at the best, rather disposed to give praise upon their own accord than to make payment upon demand or challenge.—Sir Henry Wotton.

ON ROPES AND ROPE-MAKING.

II.

The Nature and Cultivation of Flax.

The botanical name of the flax plant is *Linum*, a word considered by some to be derived from the Greek verb λινεω, *to hold*, the fibres of this plant being so remarkable for their tenacity, that its herbage has always been in the greatest estimation for the manufacture of cloth, cordage, &c.

The stem of the flax plant, which is round and hollow, grows to the height of about two feet, and then divides into several branches; these are terminated by blue flowers, consisting of five petals, and are succeeded by capsules divided within into ten cells, in each of which is inclosed a bright, slippery, elongated seed. The leaves are long, narrow, sharp-pointed, and placed alternately along the stem and branches of the plant. The plant is cultivated for the fibrous bark, bearing the name of *flax*, for the *linseed oil* expressed from the seeds, and for the *oil-cakes*, (a fattening food for cattle,) formed by the seed when the oil has been expressed. The mode of cultivation varies somewhat according as the bark or the seed is the chief object to be obtained. We shall therefore confine ourselves to that routine of operations whereby the fibrous bark is procured.

The most proper soil for flax is a deep free loam, moderately moist; especially if there be water at the depth of a foot or two beneath the surface, as is the case in Zealand, and other parts of Holland, where flax is grown of great excellence. The land requires to be rendered fine and mellow, by repeated ploughings and harrowings. Where grass land is to be broken up for this crop, it should be done in the autumn, and left exposed to the influence of the atmosphere until the early part of the following year; when it should be well pulverized and broken down by heavy harrowing, then in the course of a week or two ploughed again; in which state it may remain till the period of putting in the seed, when another light harrowing should be given, and the ploughing performed afterwards by a very light furrow. But in cases where the crop is sown after grain, or other crops that have the property of keeping the ground free from weeds, the first ploughing need not be given till January; when it may remain in that state until the early spring, being then well reduced by good harrowing and rolling; and after continuing in that state about a fortnight, the seed may either be immediately put in, or another light ploughing and harrowing be first given. The quantity of seed put in is generally about two, or two and a half bushels per English acre. The best time for sowing is about the latter end of March or the beginning of April. The best method of sowing, when the flax rather than the seed is the object of cultivation, is that of broad-cast over the surface of the ground; care being taken that the seed be dispersed as evenly as possible to prevent the plants rising in an unequal or tufty manner. It should afterwards be covered in by regular harrowing with a light common or bush harrow. When the plant is cultivated for its seed, the drill method of sowing is preferred; but this we need not dwell on, for the reason before assigned.

As soon as the crop is sufficiently up, it is benefited by a good hand-hoeing or weeding; care being taken not to injure the plants by too much treading amongst them. Flax is sometimes damaged by insects, when it is about four inches high: these, it is said, may be destroyed by a slight strewing of soot, ashes, &c., over the crop; at all events this dressing will give vigour to the flax, even if it do not kill the insects. If any weeds appear afterwards among the flax, as is generally the case, they must be very carefully rooted out. The finest flax is very liable to be beaten down in stormy weather; and to prevent this it has been proposed to fasten small ropes across the field, both lengthwise and breadthwise: these

being fastened where they intersect one another, and supported by stakes at due distances, form a kind of network, which constitutes a protection to the crop.

Much discussion has arisen among agriculturists as to the period when the plant is most fitted to be pulled up; but without entering into these discussions, we may state that when the pulling is about to take place, if the object be the flax and not the seed, the crop is pulled up by the roots, and placed in small parcels usually termed *beats*, upon the surface of the land, for exposure to the sun. It is afterwards tied up, in order to be conveyed to the place where it is to undergo the process of watering. In pulling the flax it is usual, when the seeds are to be saved, to follow a procedure somewhat different.

The watering of the flax is that process in which the stalks are steeped or exposed to moisture for a longer or shorter period. The object of this process is that of inducing the separation of the flaxy material, by exciting a slight degree of fermentation in the substance which attaches it to the stem of the plant. This flaxy exterior is called the *harl*, while the central stem or woody portion is termed the *boon* or *reed*, and it will at once be understood that the harl is that portion which yields the flaxen fibres. We stated, when describing the cultivation of hemp, that the watering is effected in one of two different ways; *viz.*, *water-retting* and *dew-retting*, of which the first is a steeping of the plant in water for several days; while the latter is an exposure of the plant to the action of the atmosphere on a large piece of ground. The modes in which flax is treated bear so close a resemblance to these that we shall not feel it necessary to describe them. We will therefore suppose the flax stalks to have been "retted" or watered, and to have attained that state which is deemed necessary for the easy separation of the harl from the boon. The plants are then carried away from the grassy sward, and deposited in barns, till wanted to undergo the process of "breaking" or dressing, which is the separation of the harl from the boon. In some places, however, before the flax is carried to the barn, it is exposed to the heat of the sun, by being placed against a wall or paling in a slanting direction, or to the heat of a fire by being placed on hurdles or in an oven heated by refuse flax: in either case, the heat is very gently applied, and only to such an extent as will dispel any dampness that the flax may have acquired.

For breaking and separating the harl or fibre from the boon different processes are employed, according to the rudeness or completeness of the arrangements in the place where the operation is carried on. The old method of proceeding was with a *stock* and *scutcher*. The stock is a bar or rail of wood, on which the man rests the stem of flax, which he holds in the left hand; then with the right he holds a kind of triangular hammer or mallet, called a scutcher, with which he beats the stalk, and separates the fibre from the boon. A somewhat better means than this was the *brake*. This is a machine consisting of two levers hinged at one end, and provided with sharp teeth at their meeting edges. The flax (or hemp) being held in the left hand, and placed between the levers, the upper lever is pressed down quickly and repeatedly, the stems being dexterously moved so as to cause the boon or reed to be broken in almost every part, without cutting or injuring the fibres.

An improved form of the brake, called the foot-brake, was introduced into Scotland some years ago, by which flax is broken with much greater expedition than by the hand-brake. The foot of the workman, by stepping on a treadle, moves round a large fly wheel, which by some connecting mechanism moves one arm of a horizontal lever, so as to make the lever oscillate to and fro in a vertical direction. At the other end of this lever is suspended a piece of apparatus called the *brake-mallet*, weighing upwards of thirty pounds, at the under surface of which are two wedge-shaped cutters or knives seventeen inches long, three inches deep, an inch and a quarter thick at the back, and a quarter of an inch thick at the edge. These knives, being let fall suddenly by the weight of the brake-mallet, strike with considerable force on the pieces of hemp or flax, which are placed across a stand called the under-brake, provided with three wedge-shaped knives, similar to those just alluded to. As the two upper knives are fixed with the edges downwards, and the lower ones with the edges upwards, and as the upper knives, when let fall, sink between the lower ones, which are left apart for that purpose, it is evident that any stems or stalks placed *across* the knives must be completely crushed; but as the edges are by no means sharp, the fibres at the surface of each stalk are not actually cut.

The *scutching* of the hemp or flax is the separating of the fibres from the bruised or broken boon. Generally speaking, this is done by the same machine which breaks the boon, called a flax mill. In one form of flax mill, the breaking of the boon is effected by three indented rollers, placed one above the other; the middle of which, being forced quickly round, takes the other two along with it. One end of a handful of flax being by the workman directed in between the upper and middle rollers, a curved board or plate of tin behind the rollers guides the flax to return again between the middle and undermost rollers; and thus the operation is repeated till the boon is sufficiently broken. This part of the process being thus completed, the scutching next succeeds. Four arms, projecting from a perpendicular axle, are enclosed in a box placed around the axle; and this box is divided among the workmen, each having sufficient room to stand and handle his flax. The men pass the ends of the flax through slits in the upper part and sides of the box, so as to bring the flax within reach of the arms or scutchers; these latter, moving round horizontally, strike the flax across or at right angles, and so thresh out or clear it of the boon.

Various other machines have been employed for separating the fibre from the boon or core; but we do not deem it necessary to dwell farther on them here. It will suffice to say that the general action of all of them is to crush the boon within the fibre, and to beat out the small pieces resulting from this crushing.

In passing on to consider the processes of rope-making, it will be sufficient to speak only of hemp, since flax is not employed except for fine twine and cord.

COMMON FLAX, *(Linum usitatissimum.)*

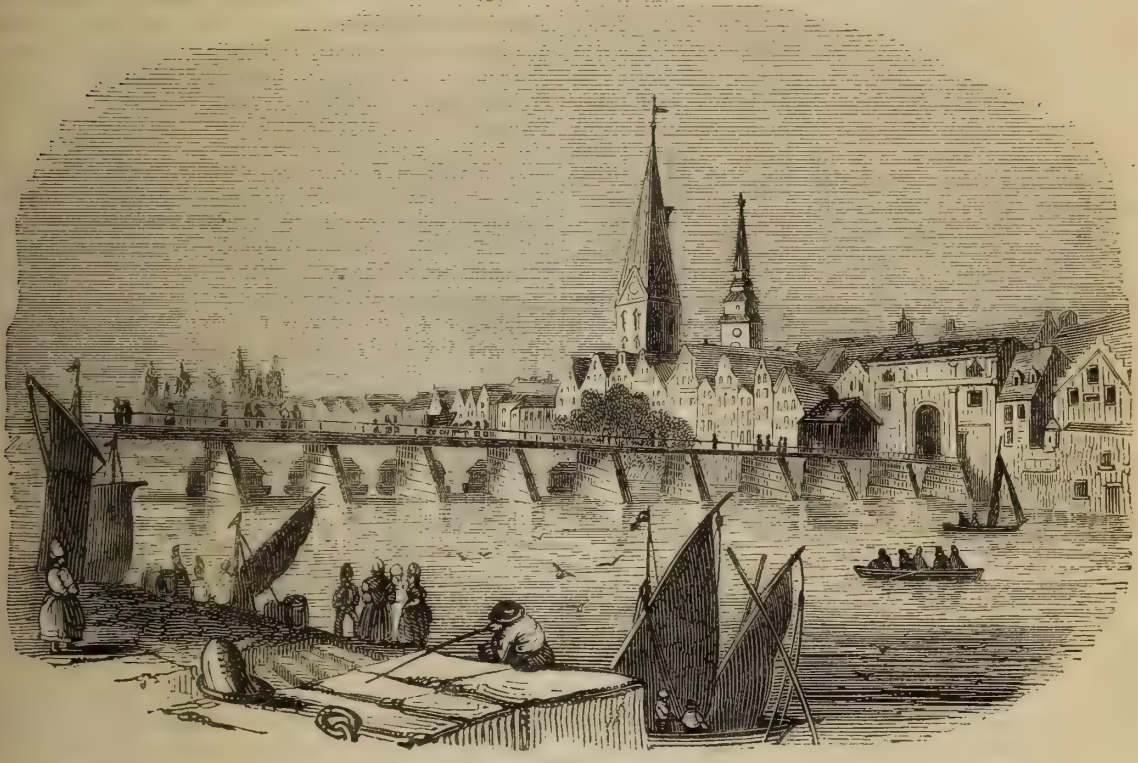
LONDON:
JOHN WILLIAM PARKER, WEST STRAND.
PUBLISHED IN WEEKLY NUMBERS, PRICE ONE PENNY, AND IN MONTHLY PARTS, PRICE SIXPENCE.
Sold by all Booksellers and Newsvenders in the Kingdom.

THE

Saturday Magazine.

No. 614. JANUARY 29TH, 1842. PRICE ONE PENNY.

THE HANSE TOWNS OF GERMANY



BREMEN.

In our Supplement on the Hanseatic League, (Vol. XVIII., p. 249,) we gave a list of the towns of that celebrated confederation at the time when it had attained the zenith of its power. At the commencement of the eighteenth century, the number of Hanse Towns was reduced to six, viz.: Bremen, Lubeck, Hamburg, Rostock, Dantzic and Cologne. We have already described Cologne and Hamburg*, and now propose to notice the other four important cities. We must, however, remark that the peculiar privileges of Hanse Towns, have long been confined to Lubeck, Bremen and Hamburg: they are accounted free cities, members of the German confederation, and have one vote each in the diet by which its affairs are arranged.

In the north of Germany the name of *Bremen* is subject to three different applications. There is a province of Hanover, situated between the rivers Elbe and Weser, and comprising an area of about two thousand square miles, called *Bremen;* there is a small district situated on either side of the Weser, and comprising an area of about seventy miles, also called *Bremen;* and lastly, there is a city contained in this small district also called *Bremen.* The political circumstances which gave rise to these different applications of the same name, were as follow. A town, called Bremen, rose into note about the year A.D. 788, when the Emperor Charlemagne made it the seat of a bishopric, which probably extended a considerable distance towards the Elbe, on the banks of which the city of Hamburg was situated. In the year 858, it was incorporated with the archbishopric of Hamburg, through which act so violent a disagreement arose between the two cities, that it was found necessary to separate them; and after the lapse of some time Bremen became the seat of an archbishopric. This archbishopric corresponded in extent with the present Hanoverian province or duchy of Bremen; but it was afterwards secularized, that is, made into a duchy instead of an archbishopric. Sweden conquered it in 1648; Denmark obtained possession of it in 1712; and lastly, it was sold to Hanover a few years afterwards, in whose possession it still remains. Meanwhile the town of Bremen had been gradually increasing in importance; it prospered greatly as one of the Hanse Towns, even when under the ecclesiastical authority of its archbishop; and enlarged the sphere of its operations when made one of the "free towns" of the empire, by Otho the First. It continued to enjoy the privileges of a separate state until Bonaparte seized it in 1810. After the battle of Waterloo, the congress of Vienna restored the liberty of the city, and gave a small district surrounding it, as part of its territorial possessions; in the same manner as was done to the cities of Hamburg and Frankfort. The reader will hence understand, that the *city* of Bremen is one of the three independent towns of the Germanic confederation; that the *state* of Bremen is a small district which surrounds, and is under the jurisdiction of the city; and that *duchy* of Bremen is a province of Hanover, once connected with, but now wholly severed from, the city of Bremen.

With the duchy of Bremen we have nothing farther to do in this place: but shall proceed to speak of the state

* See *Saturday Magazine*, Vol. VI., p. 170, and Vol. VII., p. 50.

of Bremen, as an independent power; and afterwards of the city itself. The legislative power of the state is vested in a senate, consisting of four burgomasters, two syndics, and twenty-four senators; besides which there is the convention of burghers, composed of all resident citizens who pay a certain amount of taxes. The senators, who are chosen for life, are elected out of a certain number of candidates proposed by the burghers; each election taking place at the death of a senator, and the power of election residing in the other senators, who vote by ballot. The senators form the executive, and are responsible to the convention of burghers for the due administration of the laws. Each department of government is presided over by some one member of the senate, assisted by civic deputies. The convention of burghers takes part with the senate in the enactment of legislative measures, in imposing taxes, in applying the revenues, in directing military and naval expenditure, and in taking cognizance of all matters relating to trade and navigation. The senate exercises sovereign authority in respect of foreign affairs, territorial possession, public instruction, police regulations, the administration of justice, licensing ministers of religion, &c. In short the senate is somewhat equivalent to the Sovereign in England, the convention of burghers to the House of Commons, and the senate and burghers combined to the parliament in its legislative capacity. The state forms one of the thirty-eight members of the Germanic confederation, in the diet or parliament of which it possesses one vote; and it is bound to furnish a contingent of 485 men to the army of the confederation.

The state of Bremen owes most of its importance to the extent of its commerce. The imports and the exports each equal about three millions and a half sterling per annum; the former consisting principally of tobacco, whale-oil, coffee, sugar, and wine; and the latter of lead, copper, iron, glass, grain, timber, bark, potash, drugs, hemp, flax, wool, paper, tobacco-pipes, &c. Besides the city to which it owes its importance, this little state contains two market towns, Vegesack and Bremer-Haven, and about sixty villages and hamlets. It is divided into fourteen parishes, which contain collectively about nine thousand houses, and sixty thousand inhabitants; of which number about forty-four thousand inhabit the city. The greater part of the inhabitants are Protestants; the number of Roman Catholics and of Jews being but small. The surface of the land is low, and consists principally of a marshy soil. Small as is its extent, it is watered by no fewer than six or seven affluents of the Weser, besides water-courses and canals. Neither wood nor grain are grown in large quantities; but the pastures are very rich, and support a fine breed of horned cattle.

We must now take a glance at the city itself. Bremen is divided by the river Weser into two unequal portions, of which one, termed the Altstadt, or "old town," is on the right bank of the river, and the other, called the Neustadt, or "new town," is on the left. The two towns are united by a bridge over the Weser, which passes through a small island called the Werder. Both sides of the river are lined with quays, from which a fine view of the town is obtained. The old town consists principally of narrow, crooked streets, rendered very gloomy by the loftiness of the houses. It has very large suburbs, diversified with handsome mansions, villas and gardens; it was formerly surrounded with ramparts and bastions, but these have been levelled and converted into delightful promenades, across which six roads enter the town. The only open space of any considerable magnitude in the old town is the "dom-hof" or cathedral square, and the market-place. The Cathedral is a venerable gothic structure, nearly seven hundred years old: it is about three hundred feet long, and a hundred and twenty wide; beneath it is a cellar called the "lead cellar," from the circumstance that the lead for the roof was melted and prepared in it, but it is now occupied by several mummy-like bodies, which have reposed here more than two centuries. An old town-hall, built in 1405, is chiefly noted for the curious wine-vaults beneath. It is called the Rathsweinkeller (council's wine-cellar), and is said to contain Hocheimer and Rüdesheimer wine nearly a century and a half old, and Hock more than two centuries old; along one side of the vaults are a number of small apartments, for the reception of visitors.

The new town, which was begun in the year 1625, is built in a very regular manner, with broad and handsome streets; but it has no suburbs. Bremen contains six churches in the old town, and three in the new, of which one has a steeple nearly as high as St. Paul's Cathedral in London. The present town-hall, which was once the archiepiscopal palace, has been completely renovated within the last few years, and has a range of open piazzas around it, for public accommodation. Formerly the dead were buried in churchyards within the city, as is customary in England; but several churchyards are now left unoccupied, for the purpose of affording freer circulation to the air; cemeteries having been established in the outskirts of the city.

Among the buildings in Bremen is the *Schütting*, in which the elders of the mercantile body hold their sittings; this body has the immediate superintendance over such matters as affect trade and navigation; the elders are gerents for the commercial body only, being in no way connected with the government or legislature, except as individual members of the one or the other. The exchange, the arsenal, and the weighing-house, are among the other public buildings. The city is supplied with water by waterworks in the river, by which a great wheel throws up about a hundred and twenty hogsheads of water at each revolution; the revolutions are about fifty in an hour, and the water thus thrown up is deposited in a large reservoir. Besides these water-works, there are a number of public wells in the city. The manufactures carried on within, or in the immediate neighbourhood of the town, are principally woollens, leather, tobacco, sugar refining, beer, brandy, spirits, rape-oil, whalebone, flour, soap, starch, cables, and ropes, cotton-yarn, and silks.

Of the institutions connected with education and science, are two gymnasia and a high school; schools for trade and navigation; the city library; Dr. Olbers' observatory, from which he discovered the two asteroids, Pallas and Vesta; thirty parochial and elementary schools; two orphan asylums, where three or four hundred orphans are maintained and educated, and the museum, which contains a large library, collections in natural history, mechanics, the arts, &c., as well as lecture and reading rooms. Of the origin of this museum Holcroft gives a curious account:—

> The Germans deserve high praise, as well for their public as private efforts to obtain and promote knowledge. In rude houses, where no man would have expected the least relic of science, and which not only taste but common convenience seemed to have forsworn, I have met with men as I travelled, who abounded in knowledge; and who spoke even of the fine arts so as to prove, though they had not seen, they had read. To this love of literature the Museum at Bremen is indebted for its origin. When Lavater's expensive work on physiognomy appeared, three of the inhabitants, exceedingly desirous to read it, proposed to each other to purchase it in common, and peruse it in turn. This suggested the convenience of buying other books; and at last of clubbing their small libraries, hiring a common room, and having each a key. Pipes and tobacco could not be forgotten: ice to a Neapolitan is not a more pressing want. Here they came, read, smoked, and meditated; whenever they had leisure. From this small beginning the society grew; and the spirit with which it has been maintained, the generosity of its members, the ardour of their zeal, and their thirst of inquiry, have been rewarded by the pleasures which knowledge affords, and the applause of the surrounding cities.

The inhabitants of Bremen are rather short in stature, and form a striking contrast with the tall southern Germans. They are simple and frugal in their manners, and retain many very primitive modes of living. The usual hour of dinner is eleven o'clock in the forenoon; but on Sundays it is the practice to breakfast at six in the morning, and to dine at ten. They are obliging, frank, charitable, and hospitable in their dispositions; industrious, orderly, and peaceful in their habits; possessed in general of good natural abilities, improved by a liberal education; and are well acquainted with the chief departments of useful knowledge.

SPARE MINUTES.

MEDITATED RESOLVES AND RESOLVED MEDITATIONS.

I.

It is the over-curious ambition of many to be best or to be none: if they may not do so well as they would, they will not do so well as they may. I will do my best to do the best, and what I want in power, supply in will. Thus while I pay in part, I shall not be a debtor for all. He owes most that pays nothing.

Pride is the greatest enemy to reason, and discretion the greatest opposite to pride; for while wisdom makes art the ape of nature, pride makes nature the ape of art. The wise man shapes his apparel to his body, the proud man shapes his body by his apparel. 'Tis no marvel then if he know not himself, when he is not to-day like him he was yesterday, and less marvel if good men will not know him, when he forgets himself and all goodness. I should fear, while I thus change my shape, lest my Maker should change his opinion, and finding me not like him he made me, reject me as none of his making. I would any day put off the old cause of my apparel, but not every day put on new-fashioned apparel. I see great reason to be ashamed of my pride, but no reason to be proud of my shame.

The reason that many men want their desires is, because their desires want reason. He may do what he will that will do but what he may.

I should marvel that the covetous man can still be poor when the rich man is still covetous, but that I see a poor man can be content when the contented man is only rich, the one wanting in his store, while the other is stored in his wants. I see then we are not rich or poor by what we possess, but by what we desire. For he is not rich that hath much, but he that hath enough; nor he poor that hath but little, but he that wants more. If God then make me rich by store, I will not impoverish myself by covetousness, but if he make me poor by want, I will enrich myself by content.

Hypocrisy desires to seem good rather than to be so: honesty desires to be good rather than seem so. The worldlings purchase reputation by the sale of desert, wise men buy desert with the hazard of reputation. I would do much to hear well, more to deserve well, and rather lose opinion than merit. It shall more joy me, that I know myself what I am, than it shall grieve me to hear what others report me. I had rather deserve well without praise, than do ill with commendation.

A coward in the field is like the wise man's fool: his heart is at his mouth, and he doth not know what he does profess: but a coward in his faith is like a fool in his wisdom; his mouth is in his heart, and he dares not profess what he does know. I had rather not know the good I should do, than not do the good I know. It is better to be beaten with few stripes than with many.

Each true Christian is a right traveller: his life his walk, Christ his way, and Heaven his home. His walk painful, his way perfect, his home pleasing. I will not loiter, lest I come short of home: I will not wander, lest I come wide of home, but be content to travel hard, and be sure I walk right, so shall my safe way find its end at home, and my painful walk make my home welcome.

[Arthur Warwick, 1637.]

AN IMPROVED METHOD OF SOLDERING METALS.

I.

When two pieces of iron are to be united, it is sufficient to heat them nearly to the fusing point; to place them in contact, when by means of quick and forcible hammering, they will become united as one piece. This process is called *welding*, and is peculiar to iron; the union of other metals being effected by the interposition of a metallic cement called *solder*. This substance fuses at a lower temperature than the metal to be soldered. The plumber uses a solder composed of tin and lead. The solder of the coppersmith is an alloy of copper and zinc. Hard and soft solders are used for brass; the former is composed of brass and zinc, and the latter of brass, zinc, and tin. Before soldering, the surfaces of the metals which are to be united must be made bright, smooth, and level, and free from oxide, otherwise the solder will not adhere: the contact of air must also be excluded during the soldering, because it is apt to oxidise one or other of the surfaces, and thus prevent the adhesion of the solder. Various artifices are adopted for excluding the air. The locksmith encases in loam the articles of iron or brass which are to be subjected to a soldering heat; the silversmith and brazier mix their respective solders with moist borax-powder; the coppersmith and tinman apply sal-ammoniac, rosin, or both, to the cleaned metallic surfaces, before using the soldering-iron to fuse them with the tin-alloy.

The great object of soldering is, of course, to form joints or seams in pipes, and other articles, so perfectly, that they shall be subject to no leakage or flaw. But this object is not easily obtained by the old method of soldering: the chances of flaw are numerous, and have been enumerated thus:—1st, the difference of expansion between the lead and its alloys with tin, a difference which is particularly experienced in very cold or very elevated temperatures; 2nd, the electro-chemical actions which are developed under certain circumstances by the contact of two different metallic substances*; 3rd, the very powerful re-action which a number of chemical agents exert on alloys of lead and tin, though not upon lead alone; 4th, the extreme fragility of these alloys, which, particularly when heated, often break on the slightest blow; 5th, the difficulty of making the solder adhere to the surface of the lead†; 6th, the use of rosin, which frequently conceals fractures for a time.

All of these objections are removed by a new method of soldering, invented by M. E. Desbassays de Richemont, who has recently obtained, at the National Exhibition of Arts at Paris, a gold medal for his invention. The committee on whose recommendation the medal was awarded, included some of the most distinguished chemists and men of science in France; and in their report on the subject they say:—

We consider this invention of the highest importance; it is applicable to many branches of industry, and will render great service to a large number of manufactures. Its efficacy has not only been proved by experiment, but is confirmed by the fact that most of our eminent manufacturers and tradesmen have taken out licenses for the use of it.

This invention (which is patented in France, Great Britain, and Ireland,) is called *autogenous soldering*, and consists of a method of uniting two pieces of metal without the use of solder. The parts to be joined are united by the fusion of the metal at the points or lines of junction; so that the pieces when joined form one homogeneous mass, no part of which can be distinguished

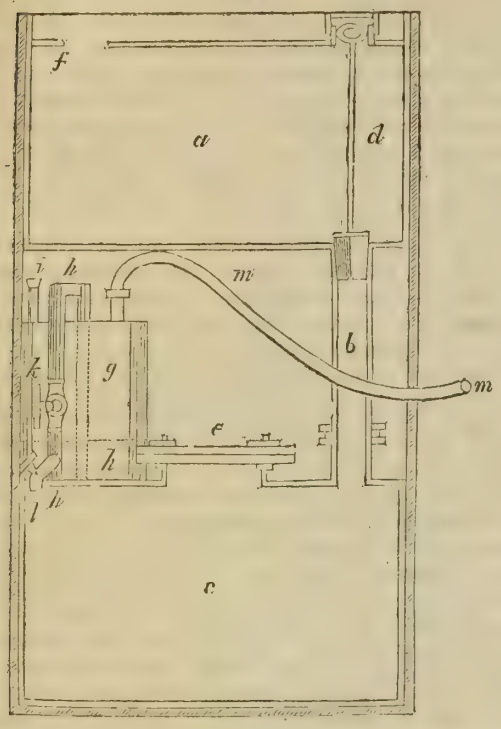
* Messrs. Vauquelin and D'Arcet state that they have seen in soap-works the soldering of vats lined with lead, crumble in a few days to a powder. The same has been remarked of leaden pipes passing through certain soils.

† The solder often sticks without uniting, and the workman may be quite ignorant of his imperfect work, and thus gas, water, or dangerous liquids, may be allowed to escape.

from the rest. This result is obtained by means of jets of flame, produced by the combustion of hydrogen gas, mixed with atmospheric air; these jets are so ingeniously managed that they can be used and directed with as much, or even more facility than the common tools of the solderer.

The apparatus employed in this new process consists of a peculiarly constructed vessel for producing hydrogen gas, to which vessel a variety of tubes and jets can be attached, so as to meet the various demands of the solderer.

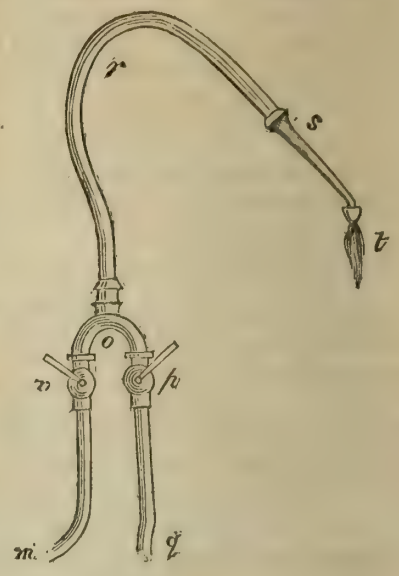
Fig. 1.



A section of the gas-producer is shown in fig. 1: *a*, is leaden tank, for containing dilute sulphuric acid; *b*, a pipe which passes from the acid vessel to another similar leaden vessel, *c*, which is to contain cuttings of zinc; *d*, is a conical plug with a stalk and handle covered with lead, by the opening of which the acid is allowed to flow through the pipe, *b*, to the zinc-cuttings, and thus hydrogen gas is produced; *e*, is an opening by which zinc is put into the vessel, *c*. The opening, *e*, has a cover furnished with screws and nuts, by which it may be firmly secured; *f* is an opening by which acid and water are poured into the vessel, *a*. When the hydrogen gas is produced, it has to pass through the safety chamber, *g*; *h* is a bent tube or pipe, which conducts the gas from the vessel, *c*, to the bottom of the safety chamber, the mouth of the pipe dipping into an inch or two of water in the safety chamber. This water is introduced by the pipe, *i*, which is furnished with a stopple. The cock, *k*, cuts off the flow of gas from the vessel, *e*, to the safety chamber, *g*. A flexible tube, *m*, is screwed to the top of the safety chamber, and conveys the gas to the working instrument, or jet, in the hands of the solderer.

As long as the dilute acid is allowed to flow upon the zinc, hydrogen gas will be produced: the gas will also be formed as long as the cock is open, which allows the gas to issue as it is produced; but as soon as the cock is shut, a small quantity of gas accumulates, and interferes with the further action of the liquid on the zinc. Consequently, there is no danger of an explosion, because the production of the gas is never more than is required for working; and when the work ceases, the production of the gas ceases also. When the dilute acid has become saturated with oxide of zinc, and gas ceases to be produced, the discharging pipe is opened, and the liquid withdrawn. By spontaneous evaporation, this liquid furnishes sulphate of zinc (white vitriol,) which may be sold at a price which will more than cover the first and daily cost of the apparatus.

Fig. 2.



We now proceed to describe the part of the apparatus with which the workman operates. In fig. 2, the flexible tube, *m*, is attached to one arm of the forked tube *o*; the other arm of *o* is attached to a pipe, *q*, proceeding from a bellows, or other means for supplying air. The solderer may work a bellows with his foot to supply his apparatus with air, or the men in a whole factory may be supplied from a blowing apparatus. A cock, *n*, regulates the supply of gas; *p* is a cock for regulating the supply of air; *r* is the pipe or tube in which the gas and air are mixed; *s*, the beak or tool from which issues the jet of flame, *t*, with which the workman operates.

The forked tube, *o*, is attached to the girdle of the workman, and the regulating cocks, *n* and *p*, are so placed, that by using one hand the man can allow the exact proportions of air and gas to issue. By stopping both cocks the flame is of course extinguished.

The beak, *s*, may be exchanged for others of every variety of form so as to produce jets of flame, adapted to any kind of work. Fig. 3, is a tool formed like the rosette of a watering-pot, capable of producing a most intense flame of jets.

Fig. 3

Fig. 4.

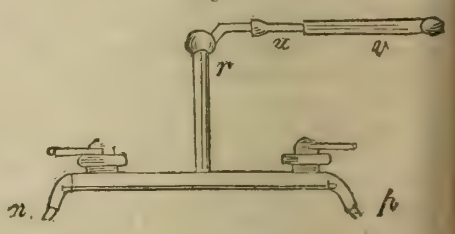


Fig. 4, allows a length of flame instead of a point to be produced; *n* is the hydrogen gas-pipe and cock; *p*, the air-pipe and cock; *r*, the tube in which air and gas mingle: *u*, a pipe with a longitudinal slit on one side of it, and *v*, another pipe covering *u*, and exactly fitting over it. Gas and air escaping from the slit, on being ignited, will produce a long strip of flame, which may be lengthened or shortened by sliding off or on the covering tube, *v*, on the slit tube, *u*.

Fig. 5 is a soldering tool, to be used where a jet of flame is not available, as in joining zinc. In this arrangement, the hydrogen and air flame heats a piece of copper, *y*, with which the work is performed. *w* is the tool, with a hollow handle and stalk; air being supplied by the pipe *p*, passes through the hollow handle and stalk; *x* is a small tube which passes down the hollow handle and stalk, *w*, and conveys gas from the pipe *n* to the extremity of *w*, where it mingles with the issuing air, and, on being ignited, the flame will heat the piece of copper, *y*, (which, of course, may be of the shape of any soldering tool required) held by the arms, *z*.

Fig. 5.

In another article we, will state some of the advantages and useful applications of this new method of soldering metals. The apparatus and the method of working it is exhibited daily at that useful institution, the Adelaide Gallery.

ON WILHEM'S METHOD OF TEACHING SINGING.

ADAPTED TO ENGLISH USE, UNDER THE SANCTION OF THE COMMITTEE OF PRIVY COUNCIL ON EDUCATION,

BY JOHN HULLAH.

II.

We have already stated that the vocal instructions on Wilhem's system are imparted in two different forms, *i. e.*, 1st, in a large class superintended by the Master himself, and 2nd, in smaller classes conducted by Monitors. In the course of instruction now being given at Exeter Hall, the former plan is followed, in order that all may receive tuition from Mr. Hullah himself; but we shall endeavour to describe the system in both its forms, first remarking that those who have not been present at the exercises of Mr. Hullah's pupils can form little idea of the grand effect produced by the harmonious combination of about three hundred voices when the advanced classes of the singing school unite in the performance of some of those fine old anthems, or those rich madrigals, which form the delight of all real lovers of music. And to those who are privileged to attend these meetings it is matter of no small astonishment to reflect, that at the commencement of the past year, the first step in the course which has led to such pleasing results, had not been taken, and that of these singers, whose performance seems now in many respects almost beyond the reach of criticism, not one had partaken of Mr. Hullah's instructions before the 1st of February, 1841. Certainly, there must be something unusually excellent in the system, as well as in the method of communicating it, thus to facilitate the progress of so many individuals of different capacities, and different degrees of vocal power.

For the instruction of the pupils (consisting chiefly of masters and mistresses of elementary schools) at Exeter Hall, one of the large rooms of the building is selected, in which the pupils are seated on benches with their faces directed towards a platform, on which the master (Mr. Hullah) takes his station. Two black boards are provided, on which words and musical notes may be written with chalk, so as to be read distinctly by all the pupils in the class. The master is provided with a tuning-fork, to determine the pitch of musical sounds, and a wand for beating time. The master commences his instructions with a lecture on the elements of music, expressing his meaning in simple language and in an audible tone. He draws a distinction between "noise" and "music," showing how the rolling of wheels, or the blows of a hammer, produce the former, and exemplifying the latter by the ringing of bells, and the singing of birds. He then explains the meaning of the term "musical passage," as being applied to a succession of musical sounds differing in their pitch or tone. He states that the term "scale" is applied to a series of eight musical sounds, gradually ascending in pitch, the highest being called the "octave" to the lowest, and very much resembling it in character. He shows that these eight sounds are not exactly equidistant one from another, two of the intervals being smaller than the others; and he exemplifies this by sketching a *ladder* on the board, or exhibiting one printed on a tablet, the ladder having eight bars or rounds, which are placed at intervals apart corresponding to the sounds of the musical scale. He explains that the scale is called "major" or "minor" according to the positions which the two smaller intervals occupy in it.

These truths in elementary music are conveyed in a manner calculated to keep the attention of the pupils constantly alive. Sometimes the master illustrates his meaning by singing a few notes; at other times by drawing explanatory figures on the board; and he occasionally interrogates his pupils individually to ascertain whether the real meaning of the instruction is properly understood. There are numerous little difficulties which embarrass the learner of music, and which the master takes care to smooth down when the proper time arrives; such, for example, as the unfortunate application of the word *tone* in two different meanings: the one relating to each of the larger intervals of the scale, and the other to the *quality* of the sound of a musical instrument. These two meanings of the word "tone" are obviously very different, and we know from experience how necessary it is for a learner to have them clearly explained. The word "tune" is also applied in an ambiguous manner, for we speak of a person "playing a tune," and of playing or singing "in tune," alluding in the first instance to a regular composition or melody, and in the second to the correctness of *pitch* in different notes. It forms a part of Wilhem's method to have these minor difficulties explained by the master as much as possible in a familiar and conversational manner.

The book in which the course of instruction is laid down is printed in chapters; while the instructions themselves are imparted to the pupils in separate lessons, each chapter and each lesson containing a small and convenient amount of information. We shall not attempt to follow the course of instruction, chapter by chapter, or lesson by lesson; but shall mention such points as seem worthy of observation.

After having explained that a "scale" which contains no more than eight sounds or notes, is called a "diatonic scale;" that the notes are numbered from 1 to 8, beginning from the lowest; that the larger intervals are called *tones*, and the smaller *semi-tones;* that when the two semitones are between the 3rd and 4th, and the 7th and 8th notes, the scale is called a *major scale;* the master proceeds to exercise the voices of his pupils by making them sing the eight notes of the *major diatonic scale;* holding up an open hand when they sing a tone, and a *closed* hand when they sing a semi-tone. This seems the proper place to make a few remarks respecting "musical voice," and "musical ear." The reader has perhaps imagined that Mr. Hullah's numerous pupils have been selected because they *can* sing, and that those persons who may not have sung a dozen notes correctly in their lives, are excluded from these classes. The reception of *all* who desire to learn is a peculiar feature in this method, founded on an opinion, (the confirmation of which would be a matter of much interest,) that there is

no such thing, except in cases of disease, as a real inability to sing. There are some sensible remarks on this point attached to the Prefatory Minute of the Council of Education in the volume before alluded to, in connexion with the announcement of a Singing-School for Schoolmasters.

It is believed that there is no lack of teachers influenced by the laudable desire to improve themselves and their schools; but some may hesitate to enrol themselves members of a singing class under an idea that they possess *no voice* or *no ear*. This apprehension has, however, seldom or never any foundation. Such persons must be informed that every individual in a state of average bodily health, is capable of producing musical sounds, unless the vocal organ has been the subject of some specific disease. Persons who cannot discriminate one musical passage from another are very rare exceptions to a general rule. 'Every ear,' says an ingenious writer on this subject, 'in a healthy state, is a musical ear; no voice, means a voice never exercised; no ear, means an ear whose power of attention has never been trained.' Frequent and well-directed practice will mend the least tuneful voice; and attention to the correct intonation of others will improve the most obstinate ear. A large body of voices, however uncultivated, is seldom materially out of tune; persons with good ears, are seldom misled by the incorrect intonation of those who have 'bad ears,' and the latter invariably, though perhaps imperceptibly, approximate the correctness of the former.

As far as our own opportunities of judging extend, in the circles of private society, we are fully prepared to join in the opinion that *every one* (with the few exceptions mentioned above) is capable of learning to sing, with moderate correctness as to tone, and with a quality of voice not altogether unmusical. The diffidence inspired by the custom of singing *alone*, or in presence of one or two auditors, is highly unfavourable to that development and exercise of voice and ear which are necessary for the production of even a moderately good singer. This diffidence is not felt when the learner is joined by many other pupils in a similar stage of progress. There is, besides, another reason why singing in class tends to produce accuracy of ear. Dr. Arnott states in one of his scientific works, that when the body of air in a building is vibrating with the sound of many voices singing in unison, there is a tendency to bring stray voices into agreement with the main body of the singers; a tendency of which the singers themselves are not conscious, but which has the effect of educating the ear to the appreciation of musical intervals. There are laws of acoustics, in relation to the vibration of sounding bodies, which tend to confirm this statement, and to place it on a philosophical basis.

To return to our subject. As alphabetical characters or some corresponding symbols, are necessary for the expression of our thoughts on paper, so are characters of some form or other requisite for the expression of musical sounds. The master, therefore, with the aid of chalk-marks on the board, or of printed tables, shows that sounds are expressed by round spots called "notes," and that the pitch or height of sounds is indicated by placing notes at various heights in the page or board. He explains that for the purpose of fixing this relative height musicians employ a set of five lines called a *stave;* that the notes may be placed on any one of these five lines, or on any of the spaces between them; that short lines, called *ledger-lines*, are placed above and below the stave, to contain such notes as are too high or too low to be contained within it. He calls to the pupils' minds the fact that while singing we sometimes hold a long time on one sound, and at other times only a limited period; and he explains that this variation in length is represented by giving tails or branches to the notes, by which they are distinguished as the representations of sounds of different length, to which the terms *minim, crochet, quaver*, &c., are applied. If two persons are playing or singing a duet, one of them frequently remains silent for a time while the other sings or plays; and even in a solo, the effect is frequently heightened by occasional intervals of silence; the master therefore explains the means by which these pauses are represented, in the use of rests of different forms.

When the pupils have acquired these elementary notions the master proceeds to the important subject of *names of notes*. He explains that as it is necessary to apply to musical notes some names by which they may be known, various expedients have been devised for this purpose. As the 8th note in the scale bears a singular resemblance to the 1st or lowest, the same name is—under whatever system of nomenclature—given to both; and as we may suppose another scale placed above the first, the 8th note becomes the basis or foundation for this upper scale; and each note bears the same name in both. There are thus only seven different names applied to the whole range of musical notes. These seven are in England generally the first seven letters of the alphabet, but as these letters are exceedingly difficult to *sing*, musicians on the Continent adopt the much more judicious plan of using seven short syllables, of no meaning in themselves, but capable of being sung in a musical manner. These syllables are *do, re, mi, fa, sol, la, si*, and they are employed in Wilhem's system, both as conducted in France, and as adapted to English practice by Mr. Hullah. This having been made clear, the master proceeds to explain how the notes are adjusted to the lines and spaces of the stave; whether, for example, the note *do* (which is a definite musical sound, having a determinate pitch) shall be placed on this or that line, this or that space of the stave. Men's voices are, by nature, an octave lower than those of females, but it is sometimes desirable to express them by the same lines and spaces, to avoid the use of too large a number of ledger lines. The master explains how this is effected by the use of certain symbols called *clefs*, whereby the note expressed on any given line or space of the stave, varies according to the clef which may be placed at the beginning of the piece of music.

Here we may mention a peculiar feature in the system, which though very simple, is of much practical service. The fingers and thumb of the extended hand are made to represent the five lines of the stave; while the spaces between the fingers represent the spaces between the lines of the stave. The master extends his own hand, and causes the pupil to do so likewise; and when any note is mentioned, the place which it occupies in the stave is represented by pointing to the proper finger with a finger of the other hand. By this means the pupil acquires a sort of *manual* knowledge of the position of notes. The master about this time also explains the qualities and the compass of different voices, such as *soprano, contralto, tenor*, and *bass*. He shows that in most modern music the *sol* or G clef is most generally used, and accustoms his pupils to study the stave in reference to this clef. We have been surprised at the ease with which a knowledge of the stave is acquired by the class in consequence of this method. In a lecture recently given by Mr. Hullah, at a scientific institution, where a number of his pupils were present, he stood before them with the hand extended, and pointed to the fingers and spaces of that hand. Whichever finger or space was denoted by the master's hand, the pupil immediately pronounced the name of the note, at the same time singing or "sol-fa-ing" it in the proper pitch. This term "sol-fa" means, to sing the notes of the scale in proper tone or pitch, but without attaching words to them; merely using the syllables, sol, fa, &c.

The precautions taken to secure correctness in keeping time, we shall allude to in another article on this highly interesting subject.

ST. MONICA.—Drawing near her end, she sent most pious thoughts as harbingers to heaven, and her soul saw a glimpse of happiness through the chinks of her sickness-broken body.—FULLER.

RURAL ECONOMY FOR THE MONTHS.

I.

JANUARY.

Yes, JANUARY's wintry face
Oft with as dark and deep a trace
The season's furrowing wrinkles plough
As mid December's clouded brow.
As deep the snow o'erwhelms the plains,
As firm the frost the stream enchains;
And even, as old experience says
In rustic saw, with "lengthening days"
On nature's works the "strengthening cold"
Oft keeps a firmer, longer hold.——MANT's *British Months.*

AT this season of the year, when vegetation is almost wholly in a dormant state, it may appear to such of our readers as are inhabitants of cities, and little acquainted with rural affairs, that agricultural employments are nearly suspended, and that the farmers must be enjoying a season of comparative leisure. In the monthly sketches of rural economy which we propose to lay before our readers during the present year, we hope to show that each season has its peculiar duties, and that the hand of industry is needed as much and as constantly in the varied scenes of country life, as in the regular routine of city engagements. In a climate so liable to changes as ours, it is impossible to indicate the agricultural employments of any month in the year with entire accuracy, but we may perhaps be able to draw a little picture of country life, that may interest and give pleasure to many that are debarred from participating inits enjoyments.

In walking abroad to enjoy the keen but bracing air of a morning in January, the ear rather than the eye convinces us that rural labour is going on briskly around us. From the farm-yard proceed the well-known sounds occasioned by the busy threshing machine or quick resounding flail, while from the distant plantation we hear the duller strokes of the woodman's axe conveyed at intervals through the clear frosty air. While the land is for the most part allowed a season of rest, this is the favourable opportunity for timber felling. Where trees are to be taken up by the root and planted elsewhere, the spring or the autumn is the proper time for doing so; and where they are valuable for their barks they should be left untouched till the sap rises in April or May; but where the plantation needs thinning for the purpose of affording timber or fuel, this is the best time to set about the work; therefore—

Forth goes the woodman, leaving unconcerned
The cheerful haunts of man: to wield the axe,
And drive the wedge, in yonder forest drear,
From morn to eve his solitary task.
Shaggy, and lean, and shrewd, with pointed ears,
And tail cropped short, half lurcher and half cur,
His dog attends him. Close behind his heel
Now creeps he slow; and now with many a frisk
Wide-scampering, snatches up the drifted snow
With ivory teeth, or ploughs it with his snout;
Then shakes his powdered coat, and barks for joy.
Heedless of all his pranks the sturdy churl
Moves right towards the mark.

The operation of felling timber is performed in two ways. The more complete method is to dig an excavation round the stem of the tree, and to cut the roots at two or three feet distance from it. The ground is thus more effectually cleared, and prepared for other uses, while the root of the tree is obtained for immediate application to such purposes as it may be destined for. The second method is generally employed where much care is required in taking down the tree, so as not to injure any neighbouring object. This is merely to cut through the stem at the surface, and leave the root to be dug out afterwards. In cutting large trees, in order to make the tree fall the way it is required, the cross-cut saw is entered on the side the tree is intended to fall, and the trunk is cut about a third part through; the saw is then entered at the other side, and when it is cut so far as to admit a wedge, that instrument is placed exactly opposite the place where the tree is to fall, and is driven slowly and constantly till the tree is nearly cut through. The tree being felled is next divested of its branches, which are sorted according to the uses they are to be applied to. These are various, for the noble ornaments of our woods and plantations are no less important in their applicability to the service of man, than beautiful and refreshing to his sight. The brushwood, or spray of trees, may be used for fences, or for common fuel; it may be turned into charcoal, or distilled for pyroligneous acid; or it may be used instead of thatch for roofing cottages. The spray of some trees, as, for instance, the oak, willow, birch, and mountain-ash, may be used in tanning. The brushwood of the elm, poplar, and lime, is sometimes used for feeding cattle, and in Sweden is regularly dried like hay, and stacked for that purpose.

When the brushwood is laid aside for some of the purposes above mentioned, the trunk is either preserved whole for the purchaser, or it is cut in two, and the root-cut, or butt-end, being the most valuable, sold for one class of purposes at a higher price, while the top-cuts are sold for others at a somewhat lower price. We cannot here detail the different methods of seasoning timber; the common mode is to evaporate the sap by the natural warmth of the atmosphere, taking care to shelter the timber from the direct action of the sun and wind. Artificial means are also employed to shorten the process. It has been found an excellent plan to soak fir and larch timber in water strongly impregnated with lime. In consequence of this soaking, the saccharine matter in the wood, on which the worm is believed to live, is either altogether changed or completely destroyed. Scotch fir-wood employed in roofing houses, and other out-door work, treated in this manner, has stood in such situations for thirty years sound and without the appearance of a worm. In a very few years timber so employed without such preparation, would be eaten through by that insect. The consideration of the best method of preparing timber for the use of the navy, has led to the process, called, from the name of its inventor, Kyanizing. This method has already been described to our readers in the *Saturday Magazine*, Vol. XVIII, p. 221.

We have noticed the disposal of the brush-wood and trunk of felled trees; the root still remains to be spoken of. This should be eradicated as completely as possible, but in the case of large trees it is a work of trouble and difficulty. The means resorted to are splitting by wedges, rifting by gunpowder, tearing up by the common lever or the hydrostatic press. There is a small demand for compact ash and oak roots from smiths, leather-cutters, &c., but the general mode of disposing of them is to cut them up in pieces not more than three feet long and six inches in diameter, and put them up in stacks to dry.

Such are a few of the operations consequent on the woodman's task, and such is the department of labour particularly appropriate to the present season. Inactivity is a thing unknown in the natural world: when the whole vegetable creation seems reduced to a state of torpidity, those secret processes are gradually at work by which the face of nature is to be again renewed to life and beauty; so, happily for man, there is no season of the year when he may safely rest unemployed; even at that period when the face of things would lead him to conjecture that nothing remained to be done, he has only to look attentively about him, and he will find that there are occupations for him that could be carried on at no other time of the year so fitly or so well. And so much is his happiness connected with the industrious employment of his time, that we find in that circumstance, a mitigation of the original curse, "In the sweat of thy face shalt thou eat bread."

Leaving to a future time the consideration of the labours connected with the threshing out of the corn; labours, which though they are actively carried on

during the present month, are also common to other seasons of the year, we will look abroad once more over the open country, and see what is going on in the pastures. It is a very common practice to carry out manure for grass land during frosty weather; but this custom is disapproved of by many agriculturists, on the ground that the fertilising properties of the manure are dissipated and washed away by the snow and rain, before they can have time to penetrate the soil. In the county of Middlesex, where almost all the grass lands are kept for hay, the manure is always laid on in October, while the land is sufficiently dry to bear the loaded carts without injury, and when the heat of the weather has so far subsided as not to exhale the volatile parts of the dung. In some places it is applied immediately after the hay season, from the middle of July to the end of August. At whatever time it may be done, there are meadows which require regular supplies of manure, and these we shall describe. There are three kinds of perennial grass lands fit for mowing, *i.e.*, river meadows, uplands, and bog-meadows. The most valuable are those which are situated near streams or are kept moist by irrigation. In these river meadows the soil is deep and commonly alluvial, having been formed by gradual deposition from the water, or washed down from some neighbouring eminence; the mowing and pasturing of such meadows is therefore easily adjusted so as to keep the land in good condition without laying on manure.

The next in value to the river meadows are the upland pastures. The culture of these requires more attention and expense; they are more difficult to drain, and require constant supplies of manure. One of the most beautiful plants to be found at this season is a great enemy to grass lands; we mean moss, which in some of the species is so much admired by the general observer, as well as by the botanist. The luxuriant growth of this plant is fatal to the welfare of the pasture; and the only means which have been found available to check its growth, and finally destroy it, are the strengthening of the grass plants themselves by regular supplies of manure, so that they may by their own vigorous growth hinder and prevent that of their enemy. Another evil to which upland meadows are liable, if they fall into a neglected state, is, the increase of ant-hills, which sometimes prevail to such an extent as to destroy in a great measure the value of the pasture. In order to remove these, some agriculturists are in the habit of digging up the ant-hills at the beginning of the winter, three or four inches below the surface of the ground, and then cutting them in pieces, and scattering them about; but this is not found to be an effectual remedy to the evil; the ants being disseminated rather than destroyed by this plan. A better method seems to be to cut the hills entirely off, and let them lie whole at a little distance in an inverted position. The ants, reluctant to quit their home, are little disturbed by this proceeding, but adhere to their old abode, till the rain running into their holes of communication and the frosts which now easily penetrate, gradually destroy their community. Another plan is to take away the hills to some convenient spot and make a compost of them with quick lime.

Another rural employment for the present month is *hedging*, an operation to which England owes much of its pleasing and garden-like appearance. Well-made hedges form the most lasting and effectual of fences. Not even stone or brick walls can surpass them in keeping out trespassers of every description, while they are far inferior to them in other respects, and give a cold and cheerless aspect to the country. The various kinds of thorns are peculiarly adapted for hedge-rows, and we find them almost universally employed for that purpose. To have a good hedge, the soil in which it is planted must be strong, but well pulverised; the decayed sods of old pastures or commons generally promote a luxurious growth of the plants. There are different ways of forming a live fence; the common method is to plant two or three rows of quick in the side of a bank, on a level with the surface of the ground, where a sod has been turned over, and forms the base of the bank raised by the earth taken out of the ditch. This requires to be protected from sheep and cattle. Sometimes the quick is planted in two or three parallel rows on the top of the bank, which in this case is made much wider, with a ditch on each side. By this method a double fence is required, but this makes by far the most efficient hedge. In a dry soil ditches are unnecessary, and the hedge is then planted on a little bank formed by a few sods about eighteen inches wide, with a small water furrow on each side. The greatest objection to the bank and ditch fence arises from its taking up so much room. It is calculated that if the fields are squares of ten acres each, which is a convenient size, each field will, by this mode of fencing, have 1320 feet of fence in length, taking up 10,560 square feet of land, which is nearly a quarter of an acre; and that, if to this be added the outer fences against roads, woods, or commons, nearly one acre in twenty-five is taken up by banks and hedges. Where it is practical, it is therefore always advisable to have a simple hedge, without any ditch. We must omit the practical details of hedging and ditching as too comprehensive a subject for our present purpose; suffice it to say, that while they are operations which are absolutely necessary to the welfare of the farmer, they are some of the most trying to the constitutions of those employed in them. To stand for hours, as many of our labourers do, in the half frozen water of ditches or in other wet or marshy situations at this season of the year, requires the inuring influence of habit, besides a hardy state of health, to bear it.

While such employments as these occupy a portion of our rustics, there are many other cares devolving on those who have the charge of cattle. In severe weather much attention is required to prevent our flocks and herds from suffering from its effects. Our recent account of the snow-storms prevalent in the Highlands of Scotland, will give an idea of the dangers to which flocks are exposed in that part of the kingdom; and though we are happily ignorant of calamities to the same extent, yet there is annually some loss sustained by occurrences of a like nature, but of a mitigated kind. Rainy weather, when long continued, is, however, far more fatal to the generality of our sheep than hard frost, and in this respect, the present month, which is frequently a dry one, is not to be considered as their worst season.

The home-stock likewise needs a watchful eye, that all may be kept warm, well-fed, and protected from the assaults of their enemies. The interrogations of the master to the farmer's boy, so well given by Bloomfield, must now be often put by such as are anxious for the well-being of their live-stock.

> Left ye your bleating charge, when daylight fled,
> Near where the hay-stack lifts its snowy head?
> Whose fence of bushy furze, so close and warm,
> May stop the slanting bullets of the storm.
> For, hark! it blows; a dark and dismal night:
> Heaven guide the traveller's fearful steps aright!
> Now from the woods, mistrustful and sharp eyed,
> The fox in silent darkness seems to glide,
> Stealing around us, listening as he goes,
> If chance the cock, or stammering capon crows,
> Or goose, or nodding duck, should darkling cry,
> As if apprized of danger lurking nigh:
> Destruction waits them, Giles, if e'er you fail
> To bolt their doors against the driving gale.
> Strewed you (still mindful of the unsheltered head)
> Burdens of straw, the cattle's welcome bed?
> Thine heart should feel, what thou may'st hourly see,
> *That duty's basis is humanity.*

LONDON:
JOHN WILLIAM PARKER, WEST STRAND.
PUBLISHED IN WEEKLY NUMBERS, PRICE ONE PENNY, AND IN MONTHLY PARTS, PRICE SIXPENCE.
Sold by all Booksellers and Newsvenders in the Kingdom.

THE

Saturday Magazine.

Nº 615. SUPPLEMENT, JANUARY, 1842. { PRICE ONE PENNY.

FUR AND THE FUR-TRADE. I.

"VOYAGEURS DES BOIS,"—CANADIAN FUR-HUNTERS.

At the present season of the year, when fur forms so beautiful and agreeable an addition to our customary out-door attire, a succinct account of the Fur-Trade may be acceptable to our readers. It contains so many lively and exciting details that while reading the various authorities necessary to our brief compilation, we have been tempted to pause, under the impression that the details belonged rather to fiction than to truth. That any set of men, accustomed to the usages of society, more or less civilized, should voluntarily abandon the comforts derived therefrom, and wander through wildernesses and sterile plains, the companions of wild beasts, or of men almost equally wild, does indeed seem strange. Yet it is not the less true. At this present moment there are many Englishmen, and a still greater number of Scotchmen, living in the remotest wilds of North America; hundreds, nay even thousands of miles distant from any regular town. They are not driven thither by disgrace; they are not influenced by that love of glory and national honour which excite the soldier or the sailor; they do not, like Humboldt and Bonpland, Audubon and Richardson, contend with hardships for the sake of extending the bounds of scientific knowledge; they are actuated by the same feelings as the merchant and the trader; they work for worldly wealth. The persons here alluded to are the agents and clerks of the fur-companies, and their office is to collect from the Indian fur-hunters the skins of fur-bearing animals, many of which being killed at a distance of three thousand miles from the regular European towns, the hunters could not forward the skins were it not that the agents of the companies are stationed at forts or posts, established at various parts of the interior of the continent. A system of barter is thus set on foot, the European agent giving blankets, guns, and other articles, in exchange for furs, the dealings being often conducted more particularly by a rude class of men, who are half Indian, half European. The details of this system are full of that which, were they not undeniably true, we should term romance; and it is our purpose to present a view of the subject in this and a succeeding Supplement. But in order to give more completeness to our object, we shall rapidly review the usages of society, in respect of wearing fur-dresses, usages which have given rise to the mode of life hinted at above.

SECTION I.

USE OF FURS FOR GARMENTS. VARIETIES OF FURS.

RESPECTING the first use of furs for clothing, Beckmann says:—"Men first ventured on the cruelty of killing animals, in order that they might devour them as food, and use the skins to shelter themselves from the severity of the weather. At first these skins were used raw, without any preparation, and many nations did not till a late period arrive at the art of rendering them softer and more pliable, durable, and convenient. As long as mankind traded only for necessaries, and paid no attention to ornament, they turned the hairy side towards the body, but as the art of dressing skins was not then understood, the flesh side must have given to this kind of clothing, when the manners of the people began to be more refined, an appearance which could not fail of exciting disgust: to prevent which the Ozolæ inverted the skins, and wore the hair outwards." From the time when, for appearance-sake, the hairy side of a furred skin was worn externally, may be dated the use of furs in the sense which we now apply to the term. The custom was not universal, however, even in Imperial Rome, for Juvenal, when speaking of a miserly person, says,—"To guard himself against the cold, he does not wear the costly woollen clothing of the luxurious Romans, but the

skins of animals, and these even inverted, that is to say, with the hairy side turned inwards, without caring whether the appearance be agreeable or not."

The sheep, whose wool forms the material for nearly all woollen clothing, came originally from Africa, where felted garments and tents were probably first introduced, and many centuries must have elapsed before the tender sheep could be conveyed to and reared in the northern countries, where thick and immense forests produced in abundance a great variety of those animals which were capable of supplying the best furs; where mankind increased but slowly, and applied principally to hunting; and where the people lived too widely scattered to be led soon to the cultivation of the manufacturing arts by a reciprocation of experience and invention. The northern nations, therefore, clothed themselves in the raw skins of animals, a long time after the southern tribes were acquainted with the spinning and weaving of wool. The earliest of the northern tribes which poured down upon Greece and Rome are described as being clothed in fur-dresses, of which the hairy side was turned inwards: but the later tribes of invaders appear to have made an advance towards a more cleanly appearance, having the hairy side of their fur-dresses turned outward. The chiefs among them even decorated their fur dresses with some taste, and the Romans acquired from them a taste for wearing furs, the scarcity of the supply, and the distance from whence it had to be brought, being sufficient to render furs a luxurious mark of distinction among people of rank.

A curious interchange of custom succeeded; the Romans gradually became accustomed to wear fur-dresses, such as the Northerns had worn, while the latter by degrees quitted their furs for the woollen garments which the Romans had taught them to make. In the year 397, however, the Emperor Honorius forbade Gothic dresses, especially furs, to be worn either in Rome or within the jurisdiction of the city, but such a law, as in most similar cases, appears to have been very little attended to. The steps by which the custom of wearing furs spread from country to country can with difficulty be now ascertained. A modern writer on the fur-trade states:—"We find that about the year 522, when Totila, king of the Visigoths, reigned in Italy, the Suethons, a people of modern Sweden, found means, by the help of the commerce of numberless intervening people, to transmit, for the use of the Romans, the precious skins of the sable. As luxury advanced, furs, even of the most valuable species, were used by princes as linings for their tents. Thus, Marco Polo, in 1252, found those of the Cham of Tartary lined with ermines and sables, the last of which he calls *zibelines* and *zambolines*: he says that these and other precious furs were brought from countries far north, from the 'land of darkness,' and regions almost inaccessible, by reason of morasses and ice. The Welsh set a high value on furs as early as the reign of Howell Dhu, who began his reign about 940. In the next age furs became the fashionable magnificence of Europe. When Godfrey of Boulogne and his followers appeared before the Emperor Alexis Comnenus, in their way to the Holy Land, he was struck with the richness of their fur-dresses." It has been remarked that the advance of luxury in France must have been very rapid since the time of Charlemagne, who contented himself with the plain fur of the otter. Our Henry the First wore furs, yet in his distress was obliged to change them for warm Welsh flannel. By the year 1337, the luxury had attained such a pitch that Edward the Third enacted that all persons who could not spend a hundred pounds a year should be absolutely prohibited the use of this species of finery: these furs, from their great expense, must have been brought from foreign countries, obtained through the medium of the Italian states, which carried on a great traffic at that time. It is a curious circumstance that the northern parts of Asia then supplied us with almost every valuable kind of fur, whereas at present we send, by means of our possessions in North America, furs, to an immense amount, to China, where this species of luxury is highly valued.

The kinds of fur employed in the manufacture of the various articles of dress in use among us, are very numerous. We shall first mention that of the ermine, or as it is called by way of pre-eminence, "the precious ermine." This animal is found in the cold regions of Europe and Asia. North America produces an animal, identical with the ermine, but whose fur is greatly inferior in value: this animal is called the stoat. The fur of the ermine is known by being of a pure white throughout, except the tip of the tail, which is black; these tails are fastened at intervals into the skins and give the rich spotted appearance to the fur as it is worn among us. This is a small animal, the whole length from the nose to the tip of the tail being only about fourteen or fifteen inches, while the available part of the fur is not more than ten or twelve inches. The older the animal, the better is the fur it produces. The method of taking the ermine is by snares or traps, and sometimes they are shot, while running, with blunt arrows.

The sable is another animal much prized in the fur-trade. This is a native of Northern Europe and Siberia. The length of the animal is from eighteen to twenty inches, and the best skins are procured by the Samoieds, and in Yakutsk, Kamtchatka, and Russian Lapland. Some naturalists consider the sable to be merely a variety of the pine marten.

The marten is found in North America, as well as in Northern Asia, and the mountains of Kamtschatka; the European are more highly prized than the American skins, though many among the latter are rich and of a beautiful dark brown olive colour. The fiery fox, so called from its bright red colour, is taken near the north-eastern coast of Asia, and its fur is much valued in that part of the world. The fur of the young sea otter is very beautiful. It is of a rich brown colour, fine, soft, and close, and bears a silky gloss: in the older animal it becomes jet black. These animals were first sought for their fur in the early part of the eighteenth century, and were brought to Western Europe from the Aleutian and Kurile islands, where they are found in great numbers.

The South Shetland Islands were formerly resorted to by vast numbers of seals: in 1821 and 1822, the number of seal skins taken on these islands alone amounted to 320,000. Such, indeed, was the system of extermination that the animal is now almost extinct in that quarter.

The skins of various kinds of bear, fox, racoon, badger, lynx, musk rat, rabbit, hare, and squirrel, are procured in North America. The fur of the black fox, sometimes called the silver fox, is considered the most valuable. The red fox also is an article of export, especially to China, where it is used for trimmings, linings, and robes, and is ornamented in spots or waves with the black fur of the paws. The fur of the silver fox is of a deep lead colour intermingled with long hairs, white at the top, forming a lustrous silver grey. The hides of bisons, and of various kinds of deer, also form part of the fur-trade of North America.

One of the most valuable descriptions of fur is that of the beaver, an animal whose sagacity greatly tries the ingenuity of the hunter. By referring to the *Saturday Magazine*, Vol. I., p. 181, the reader will find a short account of this animal. The method of taking the beaver in summer is by a process called trapping. In winter the plan followed is thus related by Hearne: "Persons who attempt to take beavers in winter, should be thoroughly acquainted with their manner of life, otherwise they will have endless trouble to effect their purpose, because they have always a number of holes in the banks which serve them as places of retreat when any injury is offered to their houses, and in general it is in those holes that they are taken. When the beavers which are situated in a small river or creek are to be taken, the Indians sometimes find it necessary to stake the river across, to prevent them from passing; after which they endeavour to find out all their holes or places of retreat in the banks. This requires much practice and exerience to accomplish, and is performed in the following manner:—every man being furnished with an ice chisel, lashes it to the end of a small staff about four or five feet long; he then walks along the edge of the banks, and keeps knocking his chisel against the ice. Those who are acquainted with that kind of work, well know the sound of the ice when they are opposite to any of the beavers' holes or vaults. As soon as they suspect any, they cut a hole through the ice big enough to admit an old beaver, and in this manner proceed till they have found out all their places of retreat, or at least as many of them as possible. While the principal men are thus employed, some of the understrappers and their women are busy in breaking open the house, which at times is no easy task, for I have frequently known these houses to be five or six feet thick, and one in particular was more than eight feet thick in the crown. When the beavers find that their habitations are invaded they fly to their holes in the banks for shelter; and on being perceived by the Indians, which is easily done by attending to the motion of the water, they block up the entrance with stakes of wood, and then haul the beaver out of his hole, either by hand, if they can reach it, or with a large hook made for that purpose, which is fastened to the

end of a long stick. In this kind of hunting, every man has the sole right to all the beavers caught by him in the holes or vaults; and as this is a constant rule, each person takes care to mark such as he discovers, by sticking up a branch of a tree, by which he may know them. All that are caught in the house, are the property of the person who finds it. The beaver is an animal that cannot keep under water long at a time, so that when their houses are broken open, they have but one choice left, either to be taken in their house or their vaults; in general they prefer the latter, for where there is one beaver taken in the house, many thousands are taken in the vaults in the banks."

SECTION II.

Rise of the Canadian Fur-Trade. Courreurs des Bois. Licensed Traders. Trading Posts. Trading Commanders.

The reader is probably aware that the first Europeans who made any settlement in Canada were the French, who founded a colony there considerably more than two centuries ago, and remained in possession of it till about eighty years since. The colonists soon found that the environs of Montreal and the other towns were plentifully stocked with animals coated with valuable fur; and the capture of these animals formed an occupation for many of the French colonists. By degrees, the supply near the towns ceased, through the active operations of the colonists; and the Indians of the interior were encouraged to penetrate into the country, accompanied generally by some of the Canadians, who found means to induce the remoter tribes of natives to bring the skins which were most in demand to their settlements, in the way of trade. At intervals large bodies of Indians would come down from the great lakes in a squadron of light canoes, laden with beaver, and other skins. The canoes were then unladen, taken on shore, and their contents arranged in order. A rude camp, made of bark, was then pitched outside the town of Montreal, and a fair opened between the Indians and the Canadians. An audience being demanded of the Governor, he proceeded to hold a conference with the chiefs of the Indians. This conference was conducted in a mode to which the Indians have always been well accustomed. The Indians ranged themselves in semi-circles, seated on the ground, and smoked their pipes in profound silence: speeches were then made: presents were exchanged; and the whole party then proceeded to business with mutual confidence. The Indians bartered their *peltries* (a general name in the fur-countries for all kinds of skins*,) with the dealers of Montreal, for arms, kettles, knives, axes, blankets, bright-coloured cloths, and various minor articles; upon all which the dealers are said (and probably with truth,) to have cleared two hundred per cent. profit. Money was never employed on these occasions; and spirituous liquors, which formed at one time one of the articles given by the Canadians in barter for the skins, were afterwards interdicted, on account of the drunken and dissipated scenes which ensued. When the Indians had bartered away their skins, they took leave of the Governor, and paddled up the river Ottawa in their canoes towards the great lakes.

Such was the mode by which Montreal obtained its supply of furs for many years; and out of this system arose a remarkable class of persons, who have been instanced as an illustration of the fact, that it requires much less time for a civilised people to fall into the manners and customs of savage life, than for savages to rise into a state of civilization. This was the case with the *Courreurs des Bois*, or rangers of woods; originally men who had accompanied the Indians in their hunting expeditions, and made themselves acquainted with remote tracts and tribes; and who now became, as it were, pedlars of the wilderness. They were extremely useful to the merchants engaged in the fur-trade, who gave them the necessary credit to proceed on their commercial undertakings. Three or four of these *Courreurs des Bois* would form a joint-stock; purchase arms, provisions, &c., and put their property into a birch-bark canoe. This canoe they worked themselves, and either accompanied the natives in their excursions, or went at once to the country where they knew the furs were to be procured. At length, these voyages extended to twelve, fifteen, or even eighteen months, at the end of which the adventurers returned with rich cargoes of furs.

* When the skins have received no preparation but from the hunters, they are called *peltries;* but when they have had the inner side tawed or tanned, they then become *furs*.

During the short time requisite to settle their accounts with the merchants, and to procure fresh credit, they generally contrived to squander away all their gains, after which they returned to pursue their favourite mode of life: their views being answered, and their labours sufficiently rewarded, by indulging themselves in extravagance and dissipation during the short space of one month in twelve or fifteen.

This indifference about amassing property, and the pleasure of living free from all restraint, soon brought on a licentiousness of manners, which could not long escape the vigilant observation of the French missionaries, who were then in Canada, and who had much reason to complain of these *Courreurs* being a disgrace to the Christian religion: by not only swerving from its duties themselves, but by thus bringing it into disrepute with those of the natives who had become converts to it. They therefore exerted their influence to procure the suppression of this vagrant class of men.

These proceedings gave rise to another step in the machinery of the fur-trade. An order was issued by the French government, prohibiting all persons, on pain of death, from trading into the interior of the country without a licence; but, from the manner in which this licence-system was acted on, the old abuses were continued. The licences were at first granted in writing to persons of respectability; to gentlemen of broken fortunes; to poor but meritorious officers, and their widows. By the terms of each licence, the holder was allowed to fit out two large canoes with merchandise for the upper country; and no more than twenty-five licences were to be issued in any one year. But, by degrees, private licences were granted, and the total number greatly increased.

Many of the holders of licences did not fit out the expedition themselves, but sold the privilege to the fur-merchants, who thereupon employed the *courreurs des bois*, in the following manner:—"The merchant holding the licence would fit out two canoes with a thousand crowns' worth of goods, and put them under the conduct of six *courreurs des bois*, to whom the goods were charged at the rate of fifteen per cent. above the ready-money price in the colony. The *courreurs des bois* in their turn dealt so sharply with the savages, that they generally returned at the end of a year or so with four canoes well-laden, so as to ensure a clear profit of seven hundred per cent., insomuch that the thousand crowns invested, produced eight thousand. Of this extravagant profit the merchant had the lion's share. In the first place, he would set aside six hundred crowns for the cost of his licence, then a thousand crowns for the cost of the original merchandise. This would leave six thousand four hundred crowns, from which he would take forty per cent. for *bottomry*, (a kind of mortgage of a vessel, by which the owner is enabled to fit her out,) amounting to two thousand five hundred and sixty crowns. The residue would be equally divided among the six wood-rangers, who would thus receive little more than six hundred crowns for all their toils and perils."

As the employment of the wood-rangers led to scenes of lawlessness and debauchery similar to those before complained of, a farther change was made. Military posts were established at the confluence of the different large lakes of Canada; by which course the trade was protected, and the improper conduct of the wood-rangers was, in some measure, checked. Besides this, a number of able and respectable men, who had retired from the army, prosecuted the trade in person, under their respective licences, with great order and regularity, and extended their enterprises inland to an astonishing distance. These gentlemen denominated themselves *commanders*, and not *traders*, though they were entitled to both these characters; their general conduct was such as to secure the respect of the natives, and the obedience of the people necessarily employed in the laborious parts of this undertaking. Among these military posts, the chief was at Michilimackinac, situated at the strait of the same name, which joins Lake Huron to Lake Michigan. It became a great interior mart and place of deposit, at which establishments were formed by some of the regular merchants. This, too, was a rendezvous for the *courreurs des bois*, of whom one set were employed in bringing goods up from Montreal, while others were bringing down peltries from the interior. Expeditions for the north, the north-west, and the west, were fitted out at this fort or post; and the peltries thence derived were forwarded to Montreal. Michilimackinac, therefore, now filled in part the office which Montreal had formerly filled.

For a long series of years matters proceeded on the

system just sketched forth. No "fur-company" existed in Canada; but individuals embarked in the trade at their pleasure. The head-quarters were at the junctions of some of the great lakes, from whence repeated expeditions of a daring character were made into the interior. The Canadians, however, were not free from competitors. On the south of them the British merchants of New York entered on the field, and inveigled the Indian hunters, and *courreurs des bois*, into their service; while on the north, a more formidable competition was met with in the Hudson's Bay Company, which was established by royal charter, in 1670. As this Company will occupy a share of our attention hereafter, we shall here confine our narrative to the proceedings of the Canadian adventurers.

SECTION III.

Temporary decline of the Fur-Trade by the Cession of Canada to the English.—Establishment of the North-West Company.—Its Constitution,—Partners and Clerks.—System of Barter.—The Canadian Voyageurs.—Fitting out and Departure of the Canoes from Montreal to the Lakes.—Décharges and Portages.

No particular change occurred in the mode of conducting the Canadian fur-trade until the important transfer of Canada from the possession of France to that of England, in 1763; but at this period the old channels of communication were greatly disturbed. The trade gradually passed into the hands of the Hudson's Bay Company, who derived great advantages from it, for all the Indians westward of Lake Superior were now obliged to go to them for such articles of English manufacture as they had hitherto procured from the Canadians. But the total cessation of the Canadian trade with the Indians was of short duration; the immense length of the journey from Hudson's Bay to the regions of the Western Indians; the risk of property; the expenses attending such a long transport; and an ignorance of the language of those who, from their experience, must be necessarily employed as the intermediate agents between them and the natives—all conspired to make the maintenance of the traffic on the part of the Hudson's Bay Company, rather difficult. The old *courreurs des bois*, too, were slow to conform to the usages of the British traders, after having been accustomed to the freedom and familiarity of the French Canadian merchants.

In a few years time some of the Canadian houses at Michilimackinac resumed their expeditions from that town; sending off expeditions beyond the confines of Lake Superior, and gradually re-establishing a trade independent of the Hudson's Bay Company. Individual adventurers began to extend their trips to distances far beyond what had hitherto been attempted. One of these bold men, named Thomas Curry, determined to proceed as far northward as the frost would allow; and having procured guides and interpreters he proceeded as far as the Cedar Lake; whence he returned with a valuable cargo of furs. The success of this adventure induced Mr. James Finlay to undertake a similar expedition in the following year; he engaged four canoes; proceeded beyond the point attained by Curry; and returned with a very valuable cargo of furs. Mr. Joseph Frobisher was the next adventurer; he made two canoe voyages, still farther northwest than either Curry or Finlay, and made large profits by his speculations. Mr. Pond, another adventurer, was entrusted by others who entered into a joint-stock speculation, with the conduct of an expedition destined to penetrate farther than any which had yet been despatched. He succeeded in reaching Lake Athabasca, a spot about midway between Lake Superior and the Frozen Ocean; and like his predecessors, succeeding in obtaining from the Indians an exceedingly valuable supply of furs.

But notwithstanding these examples of individual success, the fur-trade was in a very unsatisfactory state among the Canadians. The Hudson's Bay Company had commenced their operations with an energy never before exhibited in that quarter; whereby trading-ports, belonging to the company, were established at nearly all the spots where the Canadian adventurers had posts. There were also other circumstances which had been thus explained by Sir Alexander Mackenzie, himself an enterprising agent in the fur-trade. "The trade was carried on in a very distant country, out of the reach of legal restraint, and where there was a free scope given to any ways or means in attaining advantage. The consequence was not only the loss of commercial benefit to the persons engaged in it, but of the good opinion of the natives, and the respect of their men, who were inclined to follow their example; so that what with drinking, carousing, and quarrelling with the Indians along their route and among themselves, they seldom reached their winter quarters; and if they did, it was generally by dragging their property upon sledges, as the navigation was closed up by the frost. When at length they were arrived, the object of each was to injure his rival traders in the opinion of the natives as much as was in his power, by misrepresentation and presents, for which the agents employed were peculiarly calculated. . . . . Thus did they waste their credit and their property with the natives, till the first was past redemption, and the last was nearly exhausted; so that towards the spring in each year, the rival parties found it absolutely necessary to join, to make one common stock of what remained, for the purpose of trading with the natives, who could entertain no respect for persons who had conducted themselves with so much irregularity and deceit."

Had matters continued to be conducted on this vicious system on the part of the Canadians, we should probably have had to record the rise of the Hudson's Bay Company to undisputed pre-eminence in the fur-trade of America; but a measure was set on foot which prevented this from taking place. In the winter of 1783-4, the Canadian merchants engaged in the fur-trade resolved to join interests and to form a company. This they accordingly did, and it was soon evident that mutual advantages would be derived by all through this arrangement; many of the traders, however, refused at first to join it, and a bitter and even sanguinary contest ensued between the parties, as to which should have the greater amount of traffic with the Indians. At length all this rivalry ceased, by the opposing adventurers taking shares in the company; and in 1787 was finally established the famous "North-West Company." The energy with which this company carried on its operations, the ability and daring perseverance of its agents, and the wide extent of country through which its traffic has been conducted, have combined to give this fur-company greater interest for the general reader than that of any other. We propose therefore, to enter somewhat minutely into the commercial machinery by which the affairs of the company were managed, and into the general mode of dealing between the Indian fur-hunters and the Canadian fur-traders. By so doing, we shall be enabled to pass over more briefly similar details respecting other companies. Sir Alexander Mackenzie was one of the earliest agents of this company; and to his account of the rise and progress of the fur-trade we shall be indebted for many of the details which follow.

The North-West Company was in spirit no more than an association of commercial men agreeing among themselves to carry on the fur trade, unconnected with any other business, although many of the parties engaged had extensive concerns altogether distinct from it. It may be said to have been supported entirely upon credit; for, whether the capital belonged entirely to the proprietor or was borrowed, it equally bore interest, for which the association was annually accountable. The joint-stock of the company consisted of twenty shares, unequally divided among the persons concerned. A certain proportion was held by people who managed the business in Canada, and were called agents of the company. Their duty was to import the necessary goods from England, store them at Montreal, get them made up into articles acceptable to the Indians, and pack them up, and forward them to the interior, and supply the funds that might be wanting for the outfits; for which they received, independent of the profit on their shares, a commission on the amount of the accounts, which they were obliged to make out annually. Two of them went annually to Fort William, the grand depôt of the company on the western margin of Lake Superior, to manage and transact the business there. They finally received the furs, which they packed up and shipped for England. In fact they formed the monied and commercial partners of the company.

The other partners or shareholders were those who dwelt in the interior country, and who managed the business of the concern with the Indians. They were not supposed to be under any obligation to furnish capital or even credit. Some of them, from their long services and influence, held double shares, and were allowed to retire from the business at any period of the existing concern with one of those shares, naming any young man in the company's service to succeed him in the other, subject to the approval of the majority of partners. The great success which ultimately

attended the proceedings of the company is attributed greatly to the system pursued with respect to these working partners; after the company became once organized, admission into it was extremely difficult, and had to be obtained by steps which have been thus stated by Mr. Washington Irving.

"A candidate had to enter, as it were, 'before the mast,' to undergo a long probation, and to rise slowly by his merits and services. He began, at an early age, as a clerk, and served an apprenticeship of seven years, for which he received one hundred pounds sterling, was maintained at the expense of the company, and furnished with suitable clothing and equipments. His probation was generally past at the interior trading-post; removed for years from civilized society, leading a life almost as wild and precarious as the savages around him; exposed to the severities of a northern winter, often suffering from a scarcity of food, and sometimes destitute for a long time of both bread and salt. When his apprenticeship had expired, he received a salary according to his deserts, varying from eighty to one hundred and sixty pounds sterling, and was now eligible to the great object of his ambition, a partnership in the company; though years might yet elapse before he attained to that enviable station. Most of the clerks were young men of good families, from the highlands of Scotland, characterized by the perseverance, thrift, and fidelity of their country, and fitted by their native hardihood to encounter the rigorous climate of the north, and to endure the trials and privations of their lot; though it must not be concealed that the constitutions of many of them became impaired by the hardships of the wilderness, and their stomachs injured by occasional famishing, and especially by the want of bread and salt. Now and then, at an interval of years, they were permitted to come down on a visit to the establishment of Montreal, to recruit their health, and to have a taste of civilized life; and these were brilliant spots in their existence."

As the Indians who kill the fur-bearing animals have no use for money, and indeed are unacquainted with its value, they exchange the peltry with the white men for such articles as may be useful or agreeable. It is therefore a part of the fur-traders' business to provide a stock of such articles, and to convey them into the interior. At the period of which we are speaking, when no "Great Westerns" or "British Queens" crossed the Atlantic, and when no steamers voyaged on the great lakes of Canada, the traffic was conducted by the slower method of ship and canoe. One complete interchange of commodities consumed nearly four years to bring about by the following steps:—1st. Sending an order for the goods, from Canada to England; 2nd. Shipping the goods from London:—3rd. Their arrival at Montreal:—4th. Making them up into useful articles and packages at Montreal:—5th. Despatching them off to the interior, by canoe:—6th. Arrival in the Indian country:—7th. Barter with the Indians for furs:—8th. Arrival of the furs at Montreal:—9th. Shipment of the furs at Montreal for the London market. The articles usually ordered for trading with the Indians were such as the following:—Coarse woollen cloth; milled blankets of different sizes; arms and ammunition; tobacco, of various kinds; Manchester goods; linens and coarse sheetings; thread, lines, and twine; common hardware; cutlery and ironmongery of varied kinds; brass and copper kettles; silk and cotton handkerchiefs; hats, shoes and stockings; calicoes and printed cottons; together with numberless trinkets of a less useful but often more attractive kind, such as bells, beads, looking-glasses, &c.

The goods being sent to Canada, were there manufactured or altered into garments, and such other things as were likely to be most acceptable to the Indians. They were then packed in canoes, and consigned to the care of the *voyageurs* or canoe-men, a class of persons so remarkable and so unique as to be worthy of a somewhat minute description.

Canada, like Sweden and a few other countries, is so intersected with lakes, that a canoe can pass from one extremity of it to the other, with scarcely any interruption. Had this not been the case, the fur-trade would probably never have attained the importance which has marked it; for the furs could hardly have been conveyed to the sea-ports from the wild interior without the aid of river navigation. The *courreurs des bois*, formerly alluded to, were employed partly to row the canoes up the rivers, and partly to roam about with the Indians: but when the traffic assumed a more regular character, these men were superseded by others whose duties were more definite; the transactions on land being intrusted to European agents and Indian hunters, and the management of the canoes being consigned to the *voyageurs*, who were nearly always French Canadians. When the old French trading-houses were broken up, after the cession of Canada to England, the voyageurs could but ill adjust themselves to the habits and usages of the conquerors, but by degrees they entered heartily into the service of the North-West Company, to whom they were ever valuable servants.

The dress of these people was a mixture of the civilized and the savage. They wore a capot or surcoat, made of a blanket, a striped cotton shirt, cloth trousers or leathern leggings, moccassins of deer skin, and a belt of variegated worsted, from which were suspended a knife, a tobacco pouch, and other implements. The language of the *voyageurs*, though originally French, became a strange mixture of French, English, and Indian. They seemed to inherit, with their French blood, much of the gaiety and lightness of heart which characterize that nation. They were full of anecdote and song, and ever ready for the dance. One of the most remarkable features in their character was, that instead of acquiring that hardness and grossness of behaviour which men in laborious life are apt to acquire, they had a fund of civility and complaisance; they were mutually obliging and accommodating, interchanging kind offices, and yielding each other assistance and comfort in all the vicissitudes to which they were so much exposed. They were universally submissive and obedient to their employers. They were capable of enduring hardships under which most other classes of men would have sunk, and manifested throughout their troubles an irrepressible cheerfulness. While on long and rough expeditions; while coasting lakes or toiling up rivers; while encamping at night on the borders, and bivouacking in the open air,—they were ever the same gay and care-killing band. As boatmen they were wonderfully expert and enduring; often rowing vigorously from morning till night with scarcely a moment's stoppage. Their French *chansons* formed a never-failing accompaniment to the movement of the oars; the steersman was wont to sing a song, with a regular burden or chorus in which all the rest joined, keeping time with their oars; and if on any rare occasion the men were observed to flag and droop in spirits, a song would immediately bring them back to their wonted joyous tone.

"The Canadian waters," says Mr. Washington Irving, who has described these scenes with his usual felicity of language, "are vocal with these little French chansons, that have been echoed from mouth to mouth, and transmitted from father to son, from the earliest days of the colony; and it has a pleasing effect, in a still, golden, summer evening, to see a batteau gliding across the bosom of a lake, and dipping its oars to the cadence of these quaint old ditties, or sweeping along, in full chorus, on a bright sunny morning, down the transparent current of one of the Canadian rivers." The same writer reminds us that these are scenes which are fast passing away. The march of mechanical invention is driving everything poetical before it. The steamboats, which are fast dispelling the wildness and romance of the lakes and rivers, are proving as fatal to the race of the Canadian voyageurs as they have been to that of the boatmen on the Mississipi. The voyageurs are no longer the lords of the Canadian seas and rivers, and the navigators of the wilderness. Some of them may still occasionally be seen coasting the lower lakes with their frail barks, and pitching their camps, and lighting their fires upon the shores; but their range is fast contracting to those remote waters, and shallow and obstructed rivers, unvisited by the steam-boat. Occasionally, when some of our adventurous fellow-countrymen have penetrated to the Arctic Ocean, through the wilds of America, the Canadian voyageurs have been hired by them to navigate their canoes through the upper lakes and rivers: such a group we have represented in our cut, as sketched by Captain Basil Hall, shortly after their return from accompanying Captain Franklin on one of his bold and daring expeditions: but an occasional employment like this has no effect on the perpetuation of the race. The voyageurs will in the course of years disappear; their songs will die away like the echoes they once awakened; and the whole will be remembered only as themes for local and romantic associations.

But whatever now is, or hereafter may be, the condition of the Canadian voyageurs, they were an important and valuable set of men to the North-West Company; and we have now to follow them up the Canadian rivers and lakes. There were about eleven hundred of these men in the service

of the Company; of whom about three hundred and fifty were employed for the summer season, in going from Montreal to Fort William, on Lake Superior. They were hired in Montreal, and were absent from the 1st of May till the end of September. For this trip the guides had from eight hundred to a thousand livres, (a livre being equal to somewhat more than ninepence English,) and a suitable equipment; the foreman and steersman from four to six hundred livres; the middle-men about three hundred livres, with an equipment of one blanket, one shirt, and one pair of trousers. Independent of their wages, they were maintained during that period at the expense of their employers, and were also allowed to traffic on their own account. A portion of this number were engaged to proceed far beyond Fort William, and to winter in the interior country; and these had much higher wages than the others. The main body of the voyageurs were hired by the year, principally for the interior traffic, and were termed "*north-men*," or "*winterers*,"—the summer voyageurs being known as "*goers* and *comers*," or by the yet stranger name of "*pork-eaters*." The north-men had higher wages, and a more complete equipment of clothing, than the others, and were generally accompanied by a formidable array of Indian wives and children, who were maintained at the expense of the Company.

When all the goods, intended for the Indian trade, had been carefully packed at Montreal, a sufficient number of canoes were purchased at about three hundred livres each, and fitted out for the expedition. Each canoe carried eight or ten men, with their baggage: sixty or seventy packages of goods; six hundredweight of biscuits; two hundredweight of pork; three bushels of pease; two oil-cloths to cover the goods; gum, bark, and wapate, to repair the canoe; a sail, an axe or two, a towing-line, and sundry small articles. "An European," says Sir Alexander Mackenzie, "on seeing one of these slender vessels thus laden, heaped up, and sunk with her gunwale within six inches of the water, would think his fate inevitable in such a boat, when he reflected on the nature of her voyage; but the Canadians are so expert that few accidents happen."

Montreal stands on the northern bank of the River Saint Lawrence, or, rather, on a small island near the north bank; and as the waters of the great Canadian Lakes are poured into this river, it might be supposed that the fur-traders proceeded at once through the lakes on their way to the interior. But there is a natural obstacle to this arrangement. If the reader inspect a map of Canada, he will perceive that the famed Falls of Niagara are situated between Lakes Erie and Ontario, the water of the former having to descend the falls before it can flow into the latter. To proceed up the lakes by this route is impracticable, and therefore a passage is sought in another direction. The river Ottawa flows into the Saint Lawrence not far from Montreal; and this river furnishes a convenient means, by the aid of a contrivance which we shall presently describe, for conveying a canoe to the upper lakes.

Before the canoes could proceed very far up the Ottawa, at the commencement of the journey falls and rapids were encountered, which gave a foretaste of what would often occur afterwards. Moore's beautiful "Canadian Boat-song" has for its scene this part of the Ottawa, and for its characters the Canadian voyageurs. The canoe-men were accustomed to call by the name of *Décharge* any part of the river where they could not row against the rapid stream. In such case they were obliged to unload their canoes, and carry the goods upon their backs, or, rather, suspended in slings from their heads. Each man's ordinary load was two packages; and the whole of them had to go and return a sufficient number of times for the transfer of all the baggage. The canoe itself was towed up by a strong line. At a place called *Chaudière*, some miles up the Ottawa, the river falls more than twenty feet, up which it is obviously impossible to tow a canoe. Such places, where the canoes as well as the goods had to be carried on the shoulders of the men, were called *Portages*, and occurred frequently in different parts of the fur-trader's route. The portage at Chaudière is about six or seven hundred paces in length; and the rock is so steep and difficult of access, that twelve men used to be required to lift each canoe out of the water. The canoe was then carried by six men, two at each end and two in the middle. This transfer was made to a spot where the current was sufficiently tranquil to embark again on the river. It seems hardly credible at the present day, but the historians of the fur-trade assure us that no fewer than *forty* of these decharges and portages occur between Montreal and Huron, at every one of which all the canoes had to be unloaded, the goods carried on men's backs, and the canoes either conveyed in a similar manner, or towed up against a strong current. It was in the performance of these laborious and harassing duties that the endurance and cheerfulness of the Canadian voyageurs were found especially valuable; not a murmur of discontent escaped them; but they proceeded with light hearts to accomplish that which could not avoided.

After entering Lake Huron, the voyageurs coasted along its northern shore, amid innumerable small islands, and at length reached a fort or post at the entrance of Lake Superior. To this fort other goods were occasionally forwarded from Montreal by a totally different route: they were conveyed in boats from Montreal to Kingston at the entrance of Lake Ontario; from thence in ships to Niagara; then overland ten miles, to avoid the Falls; then again by boats to the entrance of Lake Erie; from thence by ship through Lakes Erie and Huron; then overland for a short distance to the entrance of Lake Superior; and lastly over this noble lake by ship. For these purposes the company kept two vessels on Lakes Erie and Huron, and one on Lake Superior, of sixty or seventy tons' burden. This method of conveying goods, &c., from Montreal to Lake Superior, was found to be a less expensive one than that which we have sketched above; but at the same time attended with more risk, and requiring a much longer period. The company therefore adopted one or other method according to the circumstances of the case.

SECTION IV.

FORT WILLIAM.—MEETING OF THE TRADERS.—STYLE OF LIVING.—INLAND JOURNEY FROM FORT WILLIAM.—TRAFFIC WITH THE INDIANS.—BEAVER TRAPPERS.—INDIAN FUR-HUNTERS.—THEIR CACHES.—PERILS OF THE FUR-HUNTERS.

THE company's chief central fort was Fort William, at the north-west shore of Lake Superior, and at a spot which the voyageurs called the Grand Portage, on account of the long distance which the canoes had to be carried after they reached this place. This portage is nearly nine miles over; and each voyageur had to carry eight packages of such goods and provisions as were necessary for the interior country. The company tried both horses and oxen at this duty; but it was found that from various causes the animals were not well adapted to the kind of labour and the nature of the country. Sir Alexander Mackenzie states, that the men became so inured to this duty, that he has known some of them set off with two packages of ninety pounds each, and return with two others of the same weight in the course of six hours, being a distance of eighteen miles over hills and mountains.

The arrangements of the company were so conducted, that the "pork-eaters," or "goers and comers" arrived at Fort William, from Montreal, about the time when the "north-men" or "winterers" arrived from the interior. Only a portion of the northmen, however, thus came in each year; the others remained in the interior; and a section of voyageurs from Montreal were despatched to Rainy Lake, with supplies for these hardy winterers. The northmen who came down to Fort William, brought with them all the furs which had been collected, during a whole twelvemonth; and hence a very busy scene of exchange ensued; the supply of goods being transferred from the Canadian canoes to those which were about to return to the North; while the valuable furs for the obtaining of which so much danger and hardship had been undergone, were made into packages of one hundred pounds weight each, and forwarded to Montreal.

Sir Alexander Mackenzie, who was one of the clerks of the North-West Company at its first establishment, gives a curious picture of the mode of living adopted by these numerous visitors at Fort William, during their brief but busy sojourn at that place. The period to which his narrative applies is about the year 1790. "The proprietors, clerks, guides, and interpreters, mess together, to the number of sometimes an hundred, at several tables in one large hall; the provisions consisting of bread, salt-pork, beef, hams, fish, venison, butter, pease, Indian corn, potatoes, tea, spirits, wine, &c., and plenty of milk, for which purpose several milch cows are constantly kept. The mechanics have rations of such provisions; but the canoe-men, both from the north and from Montreal, have no other allowance here or in the voyage than Indian corn and melted fat. The corn for this purpose is prepared before it leaves Detroit,

by boiling it in a strong alkali which takes off the outer husk; it is then well washed, and carefully dried upon stages, when it is fit for use. One quart of this is boiled for two hours over a moderate fire, in a gallon of water; to which, when it has boiled a short time, are added two ounces of melted suet; this causes the corn to split, and in the time mentioned, makes a pretty thick pudding. If to this is added a little salt (but not before it is boiled, as it would interrupt the operation,) it makes an wholesome palatable food, and easy of digestion. This quantity is fully sufficient for a man's subsistence, during twenty-four hours; though it is not sufficiently heartening to sustain the strength necessary for a state of active labour." Such was the simple and frugal fare on which the Canadian voyageurs chiefly subsisted.

Leaving the "pork-eaters" to return to Montreal with the cargo of furs, we will follow the "northmen" into the interior country. The traffic from Fort William northward was carried on in a manner somewhat different from that hitherto described. The canoes brought from Montreal were too large to be navigated in the chain of small lakes and rivers which extend north-west of Lake Superior; and therefore others about half the size were procured from the natives, and navigated by four, five, or six men, according to the distance which they had to traverse. These small canoes carried, on an average, a lading of about thirty-five packages; of which about two-thirds contained goods to be bartered with the Indians for furs; and one-third contained provisions, stores, and baggage. In each of these canoes was a foreman and a steersman; the one to be always on the look-out, and to direct the passage of the canoe; the other to guide the helm. The foreman had the command of the canoe, and was obeyed in all his directions by the middlemen or rowers. Independent of these, a conductor or pilot was appointed to every five or six canoes, whom they were all obliged to obey, and who was paid liberally, as a person of superior experience. The canoes, thus equipped and manned, embarked on the north side of the Grand Portage, on the river Autourt.

Before they were many miles distant from Fort William, the canoemen had to commence a similar train of operations to those so often necessary near Montreal. At the Carre-bœuf Portage, half of the lading of each canoe was taken on shore, and carried by half the crew; while the others rowed the canoe with the remainder of the cargo through a dangerous part of the river for a distance of four miles; then they landed the other half of the cargo, and returned to meet those who were toiling along the shore with the first-mentioned portion of the burden. These portages recur with very great frequency, and were surmounted by similar means, for a very long distance from Lake Superior.

When the canoes arrived at Rainy Lake, they met with one of the forts or factories of the company, at which was repeated, on a much smaller scale, the system of exchanges which had been pursued at Fort William. The canoemen from Fort William brought to Rainy Lake a supply of goods and provisions for the winterers in the Athabasca country, situated much farther north. These latter could not reach so far as Fort William, and return to Athabasca before the winter set in; and therefore a party of the "pork-eaters" or "goers and comers" were detached from the Montreal party, and sent to meet the "northmen" at Rainy Lake. This being done, and the exchange of goods effected, the former returned to Fort William, and from thence to Montreal; while the latter pursued their way towards the north.

To such an immense distance inland did the agents of the North-West Company pursue their traffic, even so early as the year 1790, that the journey onward from Lake Rainy—itself situated far beyond the remotest confines of Lake Superior—occupied the canoes a period of two months. Up to this point little was done but toiling up the rivers and lakes, contending with rapids and portages at distances of every few miles; but at Lake Athabasca, the traders divided into different parties, for carrying on a trade with the Indians. Some embarked on the Peace River, to trade with the Beaver and Rocky Mountain Indians; some proceeded to Slave Lake, almost in the frozen regions of the north; another party proceeded to the country surrounding the Elk River; while the remainder trafficked with the Indians near Lake Athabasca.

The mode in which the traders were accustomed to carry on their dealings with the Indians was nearly as follows. In the fall of the year the natives met the traders at the forts, where they bartered the furs or provisions which they had procured. They then obtained credit for ammunition, traps, &c., and proceeded to hunt the beavers, and other animals; not returning again to the forts till the beginning of the following year. At this time they were again fitted out in a similar manner; and returned a second time with a cargo of furs, about the end of March or the beginning of April. The greater part of the hunters then returned to their country; and lived during the summer with their relations and friends in the enjoyment of that description of plenty which is derived from numerous herds of deer.

The persons who actually kill and capture the beavers are not all Indians. Some of them, under the title of *trappers*, have European blood in their veins, and form a class which is perhaps unique in North America. Mr. Washington Irving has described this class of men with great clearness: and although his narrative relates to a different part of the North American continent, and to another period than that which here occupies our attention, yet the details are so nearly applicable to every phase of the fur-hunting occupation, that we shall avail ourselves of the description in working out our object.

The trappers are generally Canadians by birth, and of French descent, who have been employed for a term of years by some fur-company; but their term being expired, continue to hunt and trap beavers on their own account, trading with the company in the same manner as the Indians. Those who trap in the employ of the company are called simply by the name of trappers; while those who thus work on their own account are distinguished by the appellation of *freemen*. Having passed their early youth in the wilderness, separated almost entirely from civilized man, and in frequent intercourse with the Indians, they lapse into the habitudes of savage life with great facility. Though no longer bound by engagements to continue in the interior, they have become so accustomed to the freedom of the forest and the prairie, that they look back with repugnance upon the restraints of civilization. Most of them intermarry with the natives, and like the latter have often a plurality of wives. During their wanderings in the wilderness they lead a precarious and unsettled existence, faring better or worse according to the vicissitudes of the seasons, the migrations of animals, and the plenty or scarcity of game. By exposure to sun and storm, and all kinds of hardships, they come gradually to resemble the Indians in complexion as well as in tastes and habits. From time to time they bring the peltries they have collected to the trading-houses of the company in whose employ they have been brought up; and traffic them away for such articles of merchandize or ammunition as they may stand in need of. At the time when Montreal was the great emporium of the fur-trader, one of these freemen of the wilderness would suddenly return, after an absence of many years, among his old friends and comrades. He would be greeted as one risen from the dead; and with the greater welcome as he returned possessed of much money. A short time, however, spent in revelry, would be sufficient to drain his purse, and sate him with civilized life; and he would return with new relish to the unshackled freedom of the forest. Numbers of men of this class were during the palmy days of the North-West Company, scattered throughout the wilds of America. Some of them retained a little of the thrift and forethought of the civilized man, and became wealthy among their improvident neighbours; their wealth being chiefly displayed in the possession of large bands of horses, which covered the prairies in the vicinity of their abodes. Most of these "freemen," however, were prone to assimilate to the Indians, in their regardlessness of the future.

A few words ought also to be said here respecting the Indian fur-hunters, who are, or were employed by the companies much in the same manner as the trappers. These hunters were generally some of the aborigines of Canada who had partially conformed to the habits of civilization, and the doctrines of Christianity, under the earlier colonists of that country. "These half-civilized Indians," says Mr. Irving, "retained some of the good, and many of the evil qualities of their original stock. They were first-rate hunters, and dexterous in the management of the canoe. They could undergo great privations, and were admirable for the service of the rivers, lakes, and forests, provided they could be kept sober, and in proper subordination; but, once inflamed with liquor, to which they were madly addicted, all the dormant passions inherent in their nature were prone to break forth, and to hurry them into the most vindictive and bloody acts of violence." Though they generally pro-

fessed the Roman Catholic religion, yet it was mixed occasionally with some of their ancient superstitions; and they retained much of the Indian belief in charms and omens. Numbers of these men were employed by the North-West Company, as trappers, hunters, and canoe-men, but on lower terms than were allowed to white men.

Some of these Indian hunters, in the depths of the wilderness, are hostile to each other; hence arise bitter scenes of strife and often of bloodshed. They are, under such circumstances, not slow in robbing each other's hoards when unprotected; and hence has arisen a singular mode of concealment, when one party of Indians is forced to leave a portion of their property in a spot liable to be visited by a hostile party. A receptacle called a *cache* is formed, so designated by the early French colonists, from the French verb *cacher*, "to conceal;" although the method itself was probably known to the Aborigines before the arrival of the French.

The mode of constructing these caches illustrates in a curious manner the native cunning of the Indians. The first care is to seek out a proper situation, which is generally some dry, low bank of clay, on the margin of a watercourse. As soon as the precise spot is pitched upon, blankets, saddle-cloths, and other coverings, are spread over the surrounding grass and bushes, to prevent foot-tracks, or any other derangements; and as few hands as possible are employed. A circle of about two feet in diameter is then cut in the sod, which is carefully removed, with the loose soil immediately beneath it, and laid aside in a place where it will be safe from anything that will change its appearance. The uncovered area is then dug perpendicularly to the depth of about three feet, being made gradually wider as it descends, till a conical chamber six or seven feet deep is formed. The whole of the earth displaced by this process, being of a different colour from that on the surface, is handed up in a vessel, and heaped into a skin or cloth, in which it is conveyed to the stream, and thrown into the midst of the current, that it may be entirely carried off. Should the cache not be formed in the vicinity of a stream, the earth thrown up is carried to a distance, and scattered in such a manner as not to leave the minutest trace. The cave, or cache, being formed, it is well lined with dry grass, bark, sticks, and poles, and occasionally a dried hide. The property intended to be hidden is then laid in, after having been well aired: a hide is spread over it, and dried grass, brush, and stones, thrown in, and trampled down until the pit is filled to the top. The loose soil, which had been put aside, is then brought, and rammed down firmly, to prevent its sinking: and the surface is sprinkled with water, to destroy the scent, lest the wolves and bears should be attracted to the place, and root up the concealed treasure. When the neck of the cache is nearly level with the surrounding surface, the sod is again fitted in with the utmost exactness, and any bushes, stalks, or stones, that may have originally been about the spots are restored to their former places. The blankets and other coverings are then removed from the surrounding herbage: all tracks are obliterated: the grass is gently raised by the hand to its natural position; and the minutest chip or straw is scrupulously gleaned up and thrown into the stream. After all is done, the place is abandoned for the night, and, if all be right next morning, is not visited again until there be a necessity for re-opening the cache. Four men are sufficient in this way to conceal the amount of three tons' weight of provisions or merchandise, in the course of two days. Such are the extreme precautions which these people take, to preserve their property from depredation in a land where the laws and usages of civilised life are unknown.

The privations and trials to which the trappers and hunters are exposed during their wanderings, are by no means confined to hunger, cold, and fatigue; they are frequently attacked by grizzly bears, whose enormous bulk, and tenacity of life, make them formidable antagonists. As an example of this, we will quote a passage from Mr. Irving, in which he details an adventure to which a hunter or trapper, named Cannon, was exposed in the heart of America.

Cannon had just had the good fortune to kill a buffalo, and as he was at a considerable distance from his camp, he cut out the tongue and some of the choice bits, made them into a parcel, and, slinging them on his shoulders by a strap passed round his forehead, as the voyageurs carry packages of goods, set out on his way to the camp. "In passing through a narrow ravine, he heard a noise behind him, and looking round, beheld, to his dismay, a grizzly bear in full pursuit, apparently attracted by the scent of the meat. Cannon had heard so much of the invulnerability of this tremendous animal that he never attempted to fire, but, slipping the strap from his forehead, let go the buffalo meat and ran for his life. The bear did not stop to regale himself with the game, but kept on after the hunter. He had nearly overtaken him, when Cannon reached a tree, and throwing down his rifle, scrambled up it. The next instant Bruin was at the foot of the tree; but as this species of bear does not climb, he contented himself with turning the chase into a blockade. Night came on. In the darkness Cannon could not perceive whether or not the enemy maintained his station; but his fears pictured him rigorously mounting guard. He passed the night, therefore, in the tree, a prey to dismal fancies. In the morning the bear was gone. Cannon warily descended the tree, gathered up his gun, and made the best of his way back to the camp, without venturing to look after his buffalo meat."

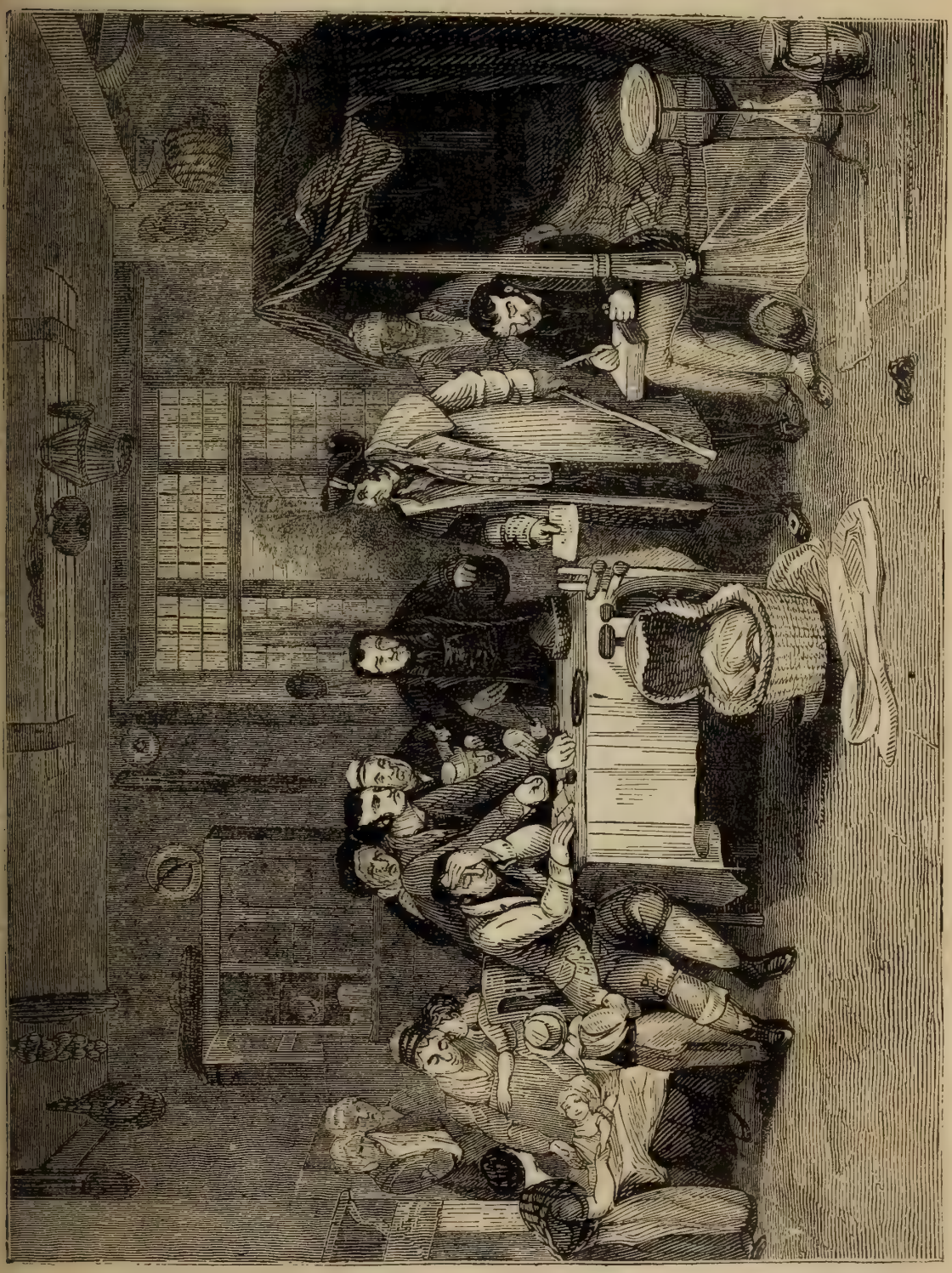
TRADING POST ON THE RIVER AUX RATS.

LONDON: Published by JOHN W. PARKER, West Strand, and sold by all Booksellers.

THE

Saturday Magazine.

Nº 616. FEBRUARY 5TH, 1842. { PRICE ONE PENNY.



DISTRAINING FOR RENT. FROM SIR DAVID WILKIE'S PICTURE

SIR DAVID WILKIE AND HIS WORKS.

II.

IN the year 1806, when our artist had only just attained the age of manhood, he exhibited his first picture in the rooms of the Royal Academy. The subject of the picture was the well-known "Village Politicians." The Committee, appointed by the Council to arrange the pictures upon the walls for the exhibition, were so much surprised by the rare display of talent manifested in the group, that it was unanimously determined to hang it in the best situation. This was at the chimney-piece of the large room, near the eye of the spectator, about five feet from the floor. During the months of May, June, and July, the attention of crowds of visitors was attracted by this picture, and the encomiums passed upon it were loud and warm. A writer of the day says:—

Of this very surprising picture it is difficult to speak in higher terms than it deserves: some of the diurnal critics have compared, and even preferred it to Hogarth. This judgment (or rather the want of it) must have been pronounced upon it by those who did not know Hogarth's pictures: it is much more in the style of Teniers, but it is not in imitation of him. Mr. Wilkie may be said to have looked at nature with the same spirit and eye that Teniers would have looked at it, and he has delineated the alehouse politicians of Scotland with the same fidelity that Teniers has represented the Dutch and Flemish boors. The interior of a country ale-house, and the general effect of the whole, are in the finest style, and lead us to rejoice at the appearance of so promising an artist. We do not know him, but sincerely congratulate him on his first essay, which gives every promise of the painter being destined to rank very high in his profession, and that in a very short time.

This picture was painted by Wilkie at a time when he was unemployed. It was sold to the Earl of Mansfield for the sum of forty guineas—a modest price certainly, but named by the artist himself previous to its exhibition. We have already seen how honourably it passed through this ordeal: it is true that the public admiration had raised the value of the picture to many times the amount of the purchase-money: the picture might have been sold for hundreds instead of tens, and an eminent connoisseur declared it to be a prize to any one at four hundred guineas. The effect of all this on the mind of the young artist was to dissatisfy him with the bargain he had made with the Earl of Mansfield, and he most unadvisedly got a friend to write to the earl, complaining of the low price, and quoting the public opinion in Wilkie's behalf. The earl replied very properly:—

I purchased the piece publicly, and gave to the painter the sum demanded, which was a preference that he appeared to be much pleased with; but now that I have made a speculation which is generally approved, he ungraciously complains. I permitted him to send it for public exhibition, and I consider his appeal to me to savour of exaction.

The exhibition of 1807 contained a picture which has delighted, and will continue to delight, every one susceptible of those feelings which unite man to man in one common brotherhood. The Blind Fiddler is a picture which every one can understand: it requires neither a cultivated eye nor a correct taste for art, to feel the truth and beauty of this production, but in common with all the works of genius, it improves on acquaintance: the more we look at it the better we like it: new beauties appeal to the eye at every new visit to this picture, and we are satisfied that the artist is true to Nature in one of her happiest moods.

We have already given the history of the original sketch for this picture: the reader will understand that the artist having enlarged and improved his idea of the subject, executed it with far more care, and with improved artistical means, knowing that it was to be exhibited, and that much depended upon its reception in public. This picture was Wilkie's execution of an order from Sir George Beaumont for a painting to the value of fifty pounds. The excellence of the picture at once established the reputation of the artist, and raised the value of his efforts to an almost unlimited extent. A critic of the day thus notices this picture:—

The Blind Fiddler is the only picture which that extraordinary young artist, Mr. David Wilkie, has in this exhibition, and it is conceived and executed in a style which leads us to regret that there are not more. It is highly finished, without any appearance of being laboured, and the story is so told as to interest the spectator in the scene. Not attempting to allure the eye by glittering colours, the painter has displayed a genuine unadulterated representation of nature. The characters are admirably contrasted, and marked with a felicity of expression more strictly appropriate than has often been delineated, except in the works of the inimitable Hogarth. It has lately become a fashionable opinion amongst painters, that all pictures which are to be exhibited must be coloured above nature, to prevent their being either overborne by the works of others, or overlooked by visitors in so large a room. This has sometimes led them into a meretricious colouring, in which, attempting to be splendidly attractive, they have become offensively gaudy. This picture proves the impropriety of any such systematic departure from truth, and we hope will impress upon the minds of young artists, the truth of an old proverb, that all which glitters is not gold.

This picture was presented to the National Gallery by Sir George Beaumont, and has been well engraved by John Burnet. A notice of a few of the principal details may be useful to those who have not seen the picture or the engraving, and may serve to call up pleasant recollections to those who are familiar with it. A poor wandering fiddler, accompanied by his wife and child, is exhibiting his skill at a farm-house: his uplifted foot shows him to be a good timeist: a mother is tossing her delighted infant to the time of the music, while the father, standing with his back to the ample fire-place, snaps his fingers to what is evidently a lively tune. A mischievous young urchin is imitating the poor old man on a pair of bellows. The figure of a child, who, with her left hand up to her mouth, gazes with fixed attention upon the old musician, forgetful of the little cart which she has been dragging about with a string, is admirable for its truth of expression. The only individuals who seem unaffected by the strains are the minstrel's own wife and child, their thoughts being apparently occupied with the prospect of a plentiful meal. The still life is also remarkable for its truth. Indeed, it was the habit of Wilkie to transfer to his canvass from the things themselves every article of furniture, &c., however minute or humble, which was to be introduced into his composition: and if possible the model was brought into his studio for that purpose, so that his interiors, which convey such exactness of delineation, were the faithful transcripts of the models he had already planned, and procured to be executed for him. One of his assistants was engaged for days in the endeavour to procure pieces of turf, such as are burnt in cottages, that the artist might introduce them into his "Alfred." None were to be found in London, and he paid a waggoner to bring some from the country. Every picture that he painted had its numerous subsidiary sketches, for heads and for hands, for single figures and for groups, and for light and shade: these first ideas were roughly drawn with pen and ink upon backs of letters, or any odd scraps of paper that came first to hand, and when they had served their purpose were thrown aside. Many of these sweepings of the study were carefully collected and preserved by a person in the employ of the artist. He mounted them in a handsomely bound volume, which he showed to the writer of this notice a few years ago, who, on inquiring its price, found it to be two hundred guineas! He obtained 100*l.* for the book, and its value now would probably amount to what he first demanded for it.

Wilkie was very fastidious in his composition, and in the arrangement of his groups, designing them many times before he satisfied himself. A friend informs us that he has seen many of Wilkie's designs for the prin-

cipal groups in the Village Holiday and other pictures, with but slight difference between them, yet every alteration was an improvement. When the artist had settled his composition in this manner, he made a small loose sketch in oil-colour of the intended picture, and sometimes corrected that sketch.

Into all his earlier pictures Wilkie introduced characters such as his native land readily supplied. From a boy his memory was stored with the characteristic features of every strolling fiddler, wandering tinker, or mendicant bag-piper that passed before him. He also procured to sit to him the husbandmen and matrons of Scotland, and with them he illustrated the social manners of his country. So well had he studied, and so happily had he selected scenes in sympathy with his own powers and the popular feeling, that his first two pictures may be said to have established his fame. These were followed by a succession of pictures in the same spirit, in which much of the fine grouping, and life, and social character of the best Dutch painters appeared, accompanied by a purity and moral purpose unknown to that school.

Wilkie was jealous of the fame for which he had laboured so hard, and was more anxious at first to do slowly and well that which practice and experience might enable him subsequently to do with celerity and ease. He therefore exhibited only one picture, the "Card-players," in the exhibition of 1808; but his freedom of touch and finish was so far improved, that in the following year he had two pictures ready for the exhibition; these were the "Cut Finger" and the "Rent-day." The latter was bought by Lord Mulgrave for three hundred guineas: this picture is well known through the medium of Raimbach's excellent engraving, which, however, falls short of the character and expression of the original. One of the attractions of the exhibition of 1809 was Wilkie's portrait by Beechey

The original picture, "Distraining for Rent," an idea of which is conveyed by our frontispiece, was exhibited in 1815. This picture was bought by the Governors of the British Institution for six hundred guineas; it was sold to Raimbach for engraving for the same sum, and when engraved, was bought from Raimbach by Mr. Wells, of Redleaf, for seven hundred guineas.

SNOW-STORMS. II.

In our last paper on this subject, we presented a few illustrations of the severe degree in which the inhabitants of Scotland are occasionally exposed to snow-storms. In the present we shall relate a remarkable instance, which occurred in Italy, of several persons being buried for a considerable period beneath masses of snow, and yet extracted alive. An account has been already given in this work of the somewhat similar case of a woman in England*.

This event occurred at a place called Bergemotetto, near Demonte, in the upper valley of Stura, among the Alps. A small cluster of houses, situated at this spot, was entirely overwhelmed by two vast bodies of snow which fell down from a neighbouring mountain, on the 19th of March, 1755. All the inhabitants, twenty-four in all, were at that moment within the houses, except a man named Joseph Rochia and his son, who were engaged in clearing the roof of their house from the snow which had been falling heavily for some days. The father and son, being warned of the threatening mass of snow by a person who was passing at a distance, made a precipitate escape; and on looking back a minute afterwards, they saw the whole of the houses completely buried in snow. The man was so unnerved by the sight that he fell ill, and for five days could not join in the exertions necessary for relieving the inmates. A party of men clambered up on the mass of snow, and tried, by digging, to find the place where each house stood; but for a long while in vain. Weeks passed on, during which all attempts to reach Rochia's house failed; but at length the April sun beginning to melt the snow, they were enabled gradually to remove or pierce through some of the snow, which was succeeded by a mass of ice six English feet in thickness.

Rochia and his brother-in-law, after working at the ice with iron bars, at length pierced it, and gained admission to their house, five weeks after the snow had enveloped it. The house was all in ruins, and the men searched in vain for the dead bodies of the inmates. On digging their way to the stable, however, which stood two or three hundred feet distant from the house, they were astonished at hearing a cry of "Help! my brother!" and immediately redoubled their exertions to remove some of the snow from the top of the stable. When this was done, the sister of one of the men was heard to exclaim, "I have always trusted in God and you, that you would not forsake me." The party entered the stable through a hole made in the snow, and there found two women and a young girl about thirteen years old. The men lifted the poor females on their shoulders, and raised them within reach of men above, who pulled them up, as if from a grave, and conveyed them to a neighbouring house: they were unable to walk, and so wasted that they appeared like mere skeletons. They were immediately attended with all the care which their neighbours could bestow, and gradually acquired strength to relate how they had supported themselves for this long period of confinement.

The intendant of the village obtained from the women an account of what had occurred. On the day of the snow-fall, they were in the stable with a boy of six years old, and a girl of about thirteen. There were also in the stable six goats, an ass, and five or six fowls. The wife, happening to go out of the stable, with the intention of kindling a fire for her husband in the house, perceived a mass of snow breaking down towards the east; she ran back hastily to the stable, shut the door, related to her sister what she had seen, and instantly after heard the mass descend on the stable, breaking down part of the roof. The terrified women crept into the rack and manger, the latter of which, by being under the main prop of the stable, resisted the weight of the snow above. Their first care was to know what they had to eat: the sister said she had fifteen chesnuts in her pocket; the children said they had breakfasted, and should want no more food that day. They remembered that there were thirty or forty cakes in a place near the stable, and endeavoured to get at them, but were not able to penetrate the snow. They called aloud for help, but, as may be supposed, received no reply. During the remainder of that day they ate two chestnuts each, and drank a little snow water.

On the second day they ate all the remaining chestnuts, and obtained a tolerable supply of milk from one of the goats. On the third day they made another attempt to get at the cakes, but without success. As they hoped to have a supply of milk from others of the goats in a short time, they endeavoured to keep the poor goats alive by the best treatment the circumstances afforded. Just above the manger was a hay-loft, whence, through a hole, one of the women pulled down hay into the rack, to feed the goats; and when it got beyond her reach, the goats climbed upon her shoulder, and helped themselves. Meanwhile the other animals, for whom the women could not afford to appropriate any portion of their scanty supply of food, gradually yielded to cold and famine. The ass was restless, and one of the goats kept bleating for some days, after which nothing more was heard of either. The fowls remained alive for twenty days, and by their crowing, gave the buried inmates some notion of the succession of night and day,

* See *Saturday Magazine*, Vol. I., p. 239.

for they were in utter darkness. On the sixth day the little boy sickened, and in six days afterwards he died, exclaiming just before his death, "O! my father is in the snow! O! father, father!"

One of the goats supplied them with about two pints of milk per day, until the period (about the middle of April) when they expected two other goats to have milk. At this time they felt compelled to kill the first-mentioned goat, which they did with many a pang, for the poor thing was wont to come and lick their hands when called, and show many signs of attachment. The women had no solid food from the time that the few chestnuts were eaten; goats' milk, and in scanty quantity, being their only means of subsistence. In reply to questions on this subject, they stated that they did not feel the pangs of hunger in any great intensity, except during the first five days. Their greatest pain was from the extreme coldness of the melted snow-water, the presence of the dead bodies of the animals, and the cramped position in which they were placed, for the manger in which they sat, crouching against the wall, was no more than three feet four inches broad. The mother had scarcely slept during the whole interval, but the sister and daughter had slept as usual.

ON ROPES AND ROPE-MAKING.

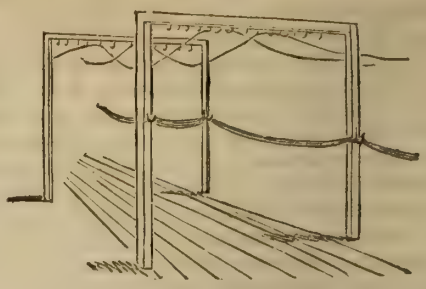
III.

The Processes of Rope-Making.

The hemp, of which all our ropes and the greater number of varieties of our string are made, is mostly brought from Russia in great bundles weighing from forty-five to sixty-five *poods* each, the pood being a Russian weight equal to about thirty-six pounds avoirdupois. These great bundles are made of smaller bundles, called *heads*, each weighing about twelve pounds; and these heads pass into the hands of the rope-maker. The hemp, although tolerably free from fragments of the boon, or other impurities, requires an operation somewhat like combing, to straighten the fibres: this process is called *hackling*, and is effected by drawing the fibres over pronged instruments called hackles, which clear from them the refuse, and split them into different degrees of fineness to suit the purposes for which they are required. The hackle consists of a number of polished steel spikes, or needles, fixed upright in a board; and in a complete set of hackles each one has the spikes closer than the one previously used, and more open than those which are to follow. The workman, standing at a convenient distance in front of the hackle, and holding by one end as large a bundle of hemp as he can conveniently grasp, draws it over the hackle, beginning with the end of the bunch farthest from his hand, and by repeated operations disentangles and splits the fibres nearly to where he grasps the bunch. He then takes hold of the finished end, and operates on the part which he had before grasped. The hemp is then drawn over a hackle with closer spikes, and then over another, and so on until the desired degree of fineness has been attained. The hemp is slightly oiled once now and then, to facilitate the operations, and the loose or short fibres which are combed out constitute what is called *tow*, employed in making inferior ropes.

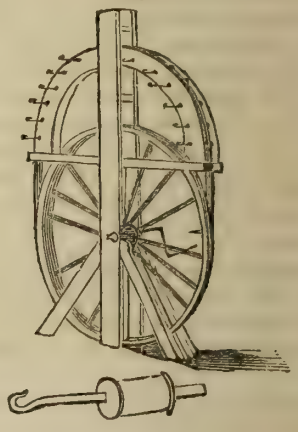
The hackled hemp being laid by in bundles, the spinner next operates on it, and produces threads or yarns. This is effected in a rope-walk, a covered shed, from six to twelve hundred feet in length, at both ends of which are machines for communicating twist to the yarn, and along both sides of which, at equal intervals, and opposite each other, are vertical posts. Between every pair of posts a rail stretches across the walk, at a height of eight feet from the ground, and along the under side of the rail hooks are fixed for supporting the yarns, and to one of the upright posts of each pair is fastened a large hook, on which the yarns are hung when collected together. At the head and foot of the walk are stout posts, also for supporting the yarns. The spinning-machinery consists

Fig. 1.



of a wheel, turned by a winch, and having a band working round half its circumference and half round an arc in which are fitted a number of little pulleys, or hooked wires, by which arrangement twelve or sixteen of these little hooked wires are set in rapid rotation, each on its respective axis. The spinner takes a bundle of hemp,

Fig. 2



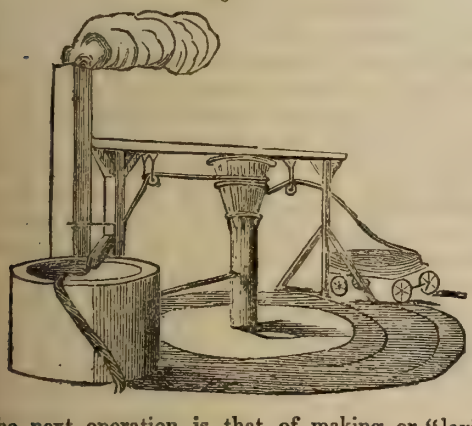
and passes it round his waist, the middle or doubled part being in front, and the ends passing each other at his back. He then draws out from the face of the bundle as many fibres as will make the size of yarn required, the middle, or "bight," of which he hangs on one of the whirl-hooks. He grasps the fibres between the finger and thumb of the right-hand, with a piece of woollen cloth interposed for the protection of his hand. He now walks backward down the rope-walk, while an assistant workman turns the wheel at the end, and thus, by making the whirl-hook rotate, imparts a twist to the fibres attached thereto. It will be evident, on a little consideration, that if a piece of string of definite length were twisted in this way for a long time, the fibres would be bound up so tight as at length to give way; but that if the length be increased as fast as the twisting goes on, the amount of twist may be made to equalize itself in any one part. Thus it is in rope-making: the assistant continues to turn the wheel, and the rope-maker continues to walk backward, regulating the supply of fibres from his bundle in such a manner as to render the yarn equal in size throughout. This regulation of the supply he effects with the left hand, drawing back the fibres as they enter his right hand in too great number, and pulling forward more when the supply is deficient. One object of his care is to prevent many ends of fibres from coming together in one place, by which the strength would become unequal in different parts.

In this manner the spinner proceeds until he comes down to the end of the walk, or as many men may be at work at once as there are whirl-hooks rotated by the spinning wheel. As each man arrives at one of the cross-rails, he throws his yarn up on one of the hooks, by which the yarn is prevented from dragging on the

ground. The men then join the ends of every pair of yarns, and hang them on the hooks inserted in the side posts, each pair being kept separate. In order now not to waste the time necessary in going from end to end of the walking ineffectively, the men proceed to spin a second set of yarns from the wheel at the bottom or "foot" of the walk, at which they have now arrived. Thus the spinners continue, until they have collected about four hundred yarns, which are then slightly twisted, to keep them together, and coiled up into a "haul." About six thousand yards of yarn are produced from a bundle of hemp weighing sixty-four pounds.

The process which follows the spinning of the yarns is that of *tarring*. The arrangements for effecting this differ slightly in different establishments, but they are nearly as follow. A copper, bedded in brick-work, with a furnace below, and flues around it, is devoted to the reception of the tar, and is called the *tar-kettle*. Into this kettle tar is poured, and heated to about the temperature of boiling water, and in this state the haul of yarn is dipped into it, or rather dragged through it. Near the kettle is a capstan, moved either by men or a horse, and between the kettle and the capstan is a *nipper*, an instrument having an aperture through which the haul must be dragged before it can be coiled round the capstan. A rope attached to the capstan is passed through the hole in the nipper and attached to the end of the haul. The haul being then immersed in the hot tar, and the capstan being set at work, the haul is drawn slowly through the tar, and the superfluous tar is squeezed out while passing through the nipper, which is so regulated as to exert a proper degree of pressure on the haul. As the yarn passes through, and is drawn away by the capstan, it is either coiled up on a stage or frame placed at hand for the purpose, or is wound at once on a reel. We may here remark that small ropes and string are not often tarred, that process being chiefly confined to the yarns intended for larger ropes.

Fig. 3.



The next operation is that of making or "laying" the *strands*. As that part of the rope-walk wherein the spinning of the yarn is effected is termed the *spinning-walk*, that which we have now to visit is called the *laying walk*. At the head or upper end of this walk is an apparatus called a tackle-board, consisting of two strong vertical posts, across the front of which is placed a stout plank, pierced with three or four holes. In each of these holes is inserted a pin, capable of being worked on its own axis by a winch handle. As twisting the yarns into strands has the effect of shortening them, the twisting-machine at the other end of the walk must be moveable to be accommodated to the varying length of the strand: it is generally formed something like the tackle-board, on a stage capable of being moved, and called a sledge. Small implements, called *tops*, are employed in the process of forming a rope. These consist of conical blocks of wood, of different sizes, having three equidistant grooves along their surface, and pins through them laterally, serving for handles. A piece of soft rope is attached to each handle of the "top" by its middle and the ends, and used to wrap round the rope in the process of making. Lastly, along the walk are ranged stakes and bearers, for supporting the strands during the process of making.

These being the arrangements, the proper number of yarns to make the rope are separated and ranged along the bearers from end to end of the walk, at about four feet from the ground. The yarns are then divided into three equal portions, each of which is hung upon its own hooks at the tackle-board and the sledge. The sledge is then pulled backwards until the yarns are all stretched tight; and arrangements are made for keeping them in this tightened condition. The three hooks connected with the winches are now turned in one direction, by which each collection of yarns hung on one hook is twisted round their common axis, and formed into a strand; the twisting of the strands shortens them, and draws the sledge up the walk.

A "strand" is one third of a rope, properly so called, and is merely a large number of yarns twisted one round another; and the rope consists of three such strands twisted together. But it is necessary to bear in mind the precautions observed in the *direction* of these twists. In the first place, the hempen fibres, as straightened and arranged by the hackle, are twisted at the spinning walk in one given direction, say to the right, and formed into *yarns;* in the next place, the assemblage of yarns necessary to form one *strand*, are twisted round one another, to the left; and in the third place, three strands, thus obtained, are twisted round one another to the right, the same way as the fibres in a yarn, but the opposite way from the yarns in a strand, and formed into a *rope*.

To effect this last mentioned twisting, namely, the forming of a rope from the strands, three strands are hung on one hook at each end of the walk; and the block of wood called the "top" is inserted among the strands, so that each strand shall rest in one of the grooves of the "top." The men at each end then turn the winches by which the hooks are governed, in opposite directions, by which the three strands are repeatedly and continually twisted around each other. The object of the "top" is to keep the three strands apart at a certain part of the length, in order that the twisting may be made regular and equable in every part. In the case of a very thick rope, the power of the men at the winches is insufficient to give the required twist to the whole length of rope; and in that case the twisting is assisted by instruments called *woolders*, each consisting of a stout pin with a rope fastened at each end. The rope of the woolder is wrapped round the rope, and the pin is used as a lever to twist the strands; the workmen at the woolders working round the rope in the same time as the hooks are twisted at the end.

To understand the philosophy of these processes, it is necessary to bear in mind the object to be effected. If the fibres used by the rope-maker were of sufficient length, the most effectual way of obtaining their united strength would be to lay them side by side, fastened together at each end, so as to form a bundle or skein; but as the fibres of hemp do not, on an average, exceed three feet and an half in length, it becomes necessary, in order to obtain a rope of greater length, so to twine them together that the strength of any single fibre shall be insufficient to overcome the resistance caused by the friction of those surrounding and compressing it; so that it will sooner break than be drawn out from the mass. This requisite entanglement is produced by twisting, which causes the fibres to compress each other; and it not only enables the rope-maker to produce cordage of any required length, but also, by making the rope hard and compact, increases its durability, and enables it to resist the penetration of water, which would rapidly impair its strength. While, however, some degree of

twist is absolutely essential to the cohesion of a rope, any twist beyond that which simply prevents the fibres being drawn out without breaking, is injurious. A skein of fibres, or a rope, may be twisted so hard that any further attempt at twisting would break it; and such a skein, or rope, will evidently have no power to support a weight, each fibre being already strained to the utmost extent that it will bear. In fact, whatever force is exerted by any fibre in compressing the rest, may be considered the same as a weight hanging on that fibre, and must be subtracted from its absolute strength before its useful effect can be ascertained; the available strength of a rope being the remainder of the absolute strength of its component fibres after deducting the force exerted in twisting them. Were a rope to be formed by simply twisting together, in one direction, the whole of the fibres of which it is composed, there is nothing to prevent its untwisting as soon as left to itself. It is therefore necessary to twist the fibres in comparatively small portions, and so to combine these into a rope that the tendency to untwist in one part may counteract the like tendency in another. Thus the same force which would cause the component parts, if separate, to become loose or untwisted, is employed, when they are combined into a rope, to keep the whole firm and compact.

We thus find an explanation of the reasons for the different processes. The fibres of hemp are twisted into stout threads called rope-yarns, about one-tenth of an inch in diameter; then from fifteen to twenty-five of these strands are twisted in the opposite direction, and formed into a strand; three or more of these strands are twisted in the same direction as the fibres of hemp in the yarns, and formed into a "strand-laid rope," or a "hauser-laid rope;" and lastly, for very large ropes, three hauser-laid ropes are twisted in the same direction as the yarns in a strand, to form a "cable-laid rope," or a cable.

We have confined our description to the mode of making ropes by hand, as originally practised, and as practised in many places at the present day. This will much more readily convey an idea of the nature of the processes than a description of elaborate machinery, employed for the same purpose. Indeed, these machines have become so varied that it would be scarcely possible to notice any of them here. Nearly thirty patents for improvements in rope-making were taken out between the years 1783 and 1807; and a constant succession of other patents has been since granted.

So far from complete inaction being perfect enjoyment, there are few sufferings greater than that which the total absence of occupation generally induces. Count Caylus, the celebrated French antiquary, spent much time in engraving the plates which illustrate his valuable works. When his friends asked him why he worked so hard at such an almost mechanical occupation, he replied, *Je grave pour ne pas me pendre*,—"I engrave lest I should hang myself." When Napoleon was slowly withering away, from disease and *ennui* together, on the rock of St. Helena, it was told him that one of his old friends, an ex-colonel in his Italian army, was dead. "What disease killed him?" asked Napoleon; "That of having nothing to do," it was answered. "Enough," sighed Napoleon, "even had he been an emperor."

Nature has beneficently provided, that if the greater proportion of her sons must earn their bread by the sweat of their brow, that bread is far sweeter from the previous effort than if it fell spontaneously into the hand of listless indolence. It is scarcely to be questioned then, that labour is desirable for its own sake, as well as for the substantial results which it affords; and, consequently, that it by no means lessens, but rather adds to, the general chance of happiness, that nearly all the members of society should, in some shape or other, be placed under an obligation to labour for their support.—DR. POTTER.

THE ROBIN RED-BREAST.

The fowls of Heaven,
Tamed by the cruel season, crowd around
The winnowing store, and claim the little boon
Which Providence assigns them. One al ne,
The redbreast, sacred to the household gods,
Wisely regardful of the embroiling sky,
In joyless fields and thorny thickets, leaves
His shivering mates and pays to trusted man
His annual visit. Half afraid, he first
Against the window beats; then, brisk, alights
On the warm hearth; then, hopping o'er the floor
Eyes all the smiling family askance,
And pecks, and starts, and wonders where he is,
Till more familiar grown, the table-crumbs
Attract his slender feet. THOMSON.

THE Robin Red-breast is a universal favourite. His familiarity and confidence in man, together with the sweetness of his plaintive song, render him a welcome visitor wherever he goes. And as at this season of the year, pressed by cold and hunger, he ventures boldly beneath our roof, and often becomes so thoroughly domesticated amongst us as to form part of our family circle, we have abundant opportunity of watching his movements, and tracing the peculiar features in his character. Let not our readers smile: the robin, the sparrow, the lark, the wren,—all our feathered acquaintance have their distinctive characters. According to their respective tribes and families, one is gentle and confiding, another pert and voracious; some are timid and retiring, others bold and obtrusive; but it is very evident to those who watch their proceedings, that they are not less distinguishable for characteristic differences of disposition and temperament, than for variety of form, voice, and plumage. This being the case, let us examine somewhat closely the character of our friendly little winter visitant, the red-breast.

The first thing that strikes us with respect to this bird is, his *familiarity*. The close-packed denizens of our cities may not be acquainted with the extent to which this quality is carried by the bird in situations where he may safely exhibit his confidence in man. Perhaps if we inquire a little closely into the matter, we shall find that this engaging trait in the character of our favourite is due to a cause which also prompts many a fair and pleasing action in the conduct of man, that is, self-interest. When the playful hum of insects is heard no more, and the worm is safely housed beneath the frost-bound surface of the earth; when the stony fruits of the hedges begin to fail, and the young buds of trees are yet defended by their hard protecting envelope, then the robin, in common with the rest of the feathered tribes, is forced to seek far and wide for sustenance, and more confiding than they, he often ventures to take up his abode with man, and finds warmth, food, and shelter, at some hospitable hearth, from which the family are loth to drive so pretty and inoffensive a guest. And though he may have no better motive than his own preservation from the fate that befals so many of his fellows, and though we are sure that at the first indication of returning spring, he will leave the roof of his benefactor, and joyfully flee away to the neighbouring grove, yet are we glad to see the bright sparkle of his clear black eye, and to hear the sweet strains with which he rewards our hospitality.

In connexion with the familiarity of the robin, we have several pleasant recollections of our own. One winter, in particular, recurs to our memory, remarkable for its peculiar severity, and for its effects on the lower animals. During that season, we were resident in a quiet and secluded spot, where we had leisure to notice more particularly the different phenomena of nature going on around us, and the results which they produced on animal and vegetable life. Many an admired evergreen, many a cherished plant fell a sacrifice to the intense cold, and among the smaller of the feathered tribe the effects were very similar. An adventurous robin, however, resolving to escape, if possible, the miseries of

cold and hunger, established himself during the day beneath the shelter of our roof. At first, with his peculiarly rapid but interrupted hop, he ventured into the kitchen, where the warmth, and the abundance of food attracted him. Here, the bustle and the hasty movements to and fro somewhat daunted his resolution, so that he could only contrive to secure a few crumbs before he made his retreat. A second attempt, made at a more auspicious moment, was so well received by the inmates, and so encouraging to the bird, that he now fearlessly ranged every part of the room in search of food, and perching on a holly branch which adorned the wall, he sang to them a few little notes of gratitude before his departure. From this time the robin was our constant guest. Early in the morning, as soon as the door was opened, he left his roosting place in a neighbouring outhouse, to enjoy the friendly shelter of his new home.

His visits, which were at first confined to the kitchen, now extended to the other parts of the house. If the door or window of the dining-room was left open for a short time, we were sure to see our little friend, who would first perform the duty of gathering up the crumbs beneath our table, and then take his favourite station on the top of an Argand lamp, which stood on the sideboard. Here he would in general content himself with watching the proceedings of the party to whose presence he had introduced himself, but occasionally we were favoured with a song, the notes of which were so sweet, clear, and yet subdued, that for the time we were wont to give precedence to his music above that of all the songsters of the spring It was now no unusual thing to find our robin in the sleeping apartments, or in those devoted to study, and when it was wished to exclude him from either of these rooms, and the window was set open for that purpose, we were sometimes highly amused to find that no sooner had we driven him out in that direction, than with his rapid flight he immediately entered the house again through the kitchen, and was winging his way upstairs to the very same apartment he had just been compelled to quit.

For a time, the excessive freedom of our guest was borne without complaint, and his visits afforded much pleasure and diversion to the younger branches of the family; but at length when every room in the house was subject to his intrusion, when he not only demanded our hospitality on his own account, but brought one of his acquaintances to share in it, and when the tarnished state of the furniture reminded us that however interesting it may be to have tame birds flying about our apartments, it is a practice wholly irreconcileable with the maxims of neatness and order; when all these things were constantly pressing upon our attention, we were at last obliged to concur in the decision, that our presuming friend must inevitably be banished the house. But this was a thing more easily talked of than done. The doors and windows could not always be kept shut; nor could we be so constantly on the watch to exclude the bird as he was on the watch to come in. This being the case, an expedient was resorted to, which, it was hoped, might prove successful. The robin was caught, put into a wicker basket, and carried to a village, about a mile distant, where he might be likely to find another home in one of the cottages, without causing the same sort of inconvenience as among onrselves. Having set him at liberty in the immediate neighbourhood of these humble dwellings, the messenger returned well pleased with his expedition; but long before he could reach our residence, the robin was at his former post, and taking advantage of the unguarded state of the house had triumphantly effected an entrance. That it was the same bird, we could not for a moment doubt, for we had, by long companionship, become so well acquainted with his form and habits, that we were able to point him out as "our robin," when associated with other birds upon the lawn.

Another week was now allowed to pass by, without any attempt to rid ourselves of an annoyance which seemed without remedy. But on the occasion of a visit of the younger members of the family to a country town about seven miles off, it occurred to the mistress of the house (whose love of order was especially outraged by the manners of the bird) that the robin might as well go too; he might possibly like the town better than the village to which we had previously sent him; at any rate, he could but come back again as before. Again we succeeded in catching the bird, and consigning him to his wicker prison. He was placed in the carriage with the children, who departed well pleased at having the charge of their little favourite. Arrived in the vicinity of the town, they opened the basket and bid adieu to the robin, half hoping, however, that they should find him at home again when they returned. In this they were deceived, for we never saw our pretty intruder again. Other birds of his kind occasionally sought and obtained our hospitality, but none were found so fearless or so troublesome as he; and none, as he did, ventured to follow the members of the family into every part of the house, and to make themselves so completely "at home."

Although we ourselves have never met with another instance of such complete familiarity on the part of the robin, we have lately read of one as occurring to M Gérardin, in November, 1788. A redbreast shivering with cold, tapped at the window of that gentleman and obtained admittance. The bird perched with the utmost confidence on the back of an elbow chair near the fire. When it had recovered from the effects of the cold, its first occupation was to attempt catching the few house flies which had been awakened from their dormancy by the warmth of the apartment. It was fed upon crumbs of bread and small shreds of boiled beef; and so well did it like its lodging and its board that it not only remained during the winter, but sung its hymns of gratitude as cheerfully every morning as if it had been perched upon a twig in the spring. It was particularly familiar with M. Gérardin, and although it did not actually assist him in his studies, it amused him while engaged in them. It perched upon his desk and sometimes upon his left hand while he was writing; in short it was more familiar than the majority of birds which are reared from the nest with the greatest care.

We shall have more to say respecting the habits of the robin on a future occasion; we now conclude with Dr. Jenner's lines addressed to this bird.

Come, sweetest of the feathered throng
And soothe me with thy plaintive song:
Come to my cot, devoid of fear,
No danger shall await thee here:
No prowling cat with whiskered face
Approaches this sequestered place:
No schoolboy with his willow-bow
Shall aim at thee a murderous blow:
No wily limed twig ere molest
Thy olive wing or crimson breast.
Thy cup, sweet bird! I'll daily fill
At yonder cressy, bubbling rill;
Thy board shall plenteously be spread
With crumblets of the nicest bread;
And when rude winter comes and shows
His icicles and shivering snows,
Hop o'er my cheerful hearth, and be
One of my peaceful family:
Then soothe me with thy plaintive song,
Thou sweetest of the feathered throng!

SKETCHES OF IRISH MANNERS AND CUSTOMS.

III.

The improvement effected by the temperance pledge in this part of the country is very striking; the people of all persuasions consider it as a great blessing. Even the public-house keepers regard it in the same light, as they say though they do not sell spirits they sell a great

deal more of everything else: the people feel their comforts increased, they can buy more meat, and more clothes, and the price of provisions has fallen. It is to be sure the most curious instance of the power of opinion; they say if they take the medal, as they phrase it, they *cannot* drink; and I know two men of very sober steady habits, who have taken the medal under the strongest conviction of its constraining power, and that they absolutely *could* not drink were they so inclined. It has happened to us to have punch refused by three men in two days. One man had fasted from five in the morning till five in the afternoon, and had walked twelve miles of most fatiguing mountain road. A meal was set before him, and punch offered, which he declined,—he had taken the pledge. Another had been employed for us in a disagreeable job under a very hot sun, merely from goodnature and obligingness, and I took the tumbler to him myself, as a little acknowledgement and likely to please him more than sending it by a servant; he thanked me very much, but declined. The third had been hard at work all day, and to encourage him to make a good job a glass of punch was promised him when it was finished; he declined, having taken the pledge; he accepted very thankfully the meal of meat that was given him instead. Perhaps three stronger cases could hardly have been found: and surely ten years ago such abstinence would not have been found in the whole island. There have been fairs in the surrounding villages; they are, indeed, innumerable, and are very useful, supplying the want of shops and markets. The people return from five to seven o'clock as quietly as they go: there may be a few lovers of *potheen* lingering in the public-houses, but there is no noise or disturbance on the roads, and the general appearance is perfectly decent and sober.

In returning from church one evening I got into conversation with a very nice woman; her cap-border and the handkerchief tied over her cap were as white as snow, and her face and hands nearly as white, and quite as clean, and the rest of her dress very neat. She was a widow with children to support,—little means and poor health. We talked, of course, of the weather and then of the sermon, and she asked me if I did not like the evening sermon better than the morning, because it told us more of ourselves: she thought it did her more good, and right enough she was; one was a plain, kindly, gospel sermon; the other clever, lively, and amusing, with allusions and quotations, and very strong against the Roman Catholics. I was glad she felt the difference, and probably there were many more of her opinion.

I like seeing the elder women at church in caps and handkerchiefs; it is the neatest and most modest headgear I ever saw, and far better adapted to the climate than bonnets, which I know by my own uncomfortable experience are always blown to the back of the head. Welsh hats would not stand firm against our gales. The girls still wear their hair coiled behind very neatly, and some wear a little black bandeau: they put their shawls over their heads when they go out in the damp or cold, which looks very picturesque, and often elegant, when the shawl is very large. The tartans are universal, of every imaginable colour and check; and the modest demeanour of the young creatures wrapped in their warm folds as they pass on their way without so much as glancing at the passers by, is quite charming.

On Sundays the girls are ambitious of bonnets, which quite spoils their appearance, and except the old women and the police, the church has a strictly English appearance; too much so, for the bare heads and bare legs are then decked in a style so much above the week-day costume, that one can hardly recognise them, and a more equal tidiness would be much better than the too frequent holes and slatternliness for six days, and the smart bonnets and flowers, silk shawls, tight sleeves and flounces of the seventh. The taste for fashion and finery is just as strong in this obscure nook, as in St. James' Street

We had the good fortune to meet with a wake the other night. A number of persons were seated on two benches as tight as they could be wedged; and there were neither eatables, nor drinkables, nor pipes. A few were smoking, but it was evidently not a thing provided for the company. There was a great deal of chat and cheerfulness going on, and apparently a little *coorting*. A sort of closet door was open, and something covered with white, with two candles burning at the end, appeared, which we took to be the coffin: we inquired for the widow and children, and were told "they were in it;" and as we could not discover them in the crowd they were probably sharing the closet with the corpse. Many persons who could by no means squeeze into the room remained outside, where the jocularity was of rather a more boisterous character, but solely the consequence of animal spirits; there would be a cry to pitch such a one into the girls; whereupon, with a great "hoorush," a boy would be jerked forward into the room, and then there would be a cry to be "more dacent." We were told it was a poor wake, but that some time ago there was one held in a loft: "And that was the great gun entirely, for the loft gave way; and it was over a byre, and there were stakes in the byre, and down came the people toppling one over another; and there was scrambling, and screeching, and struggling, and many were much hurt; and sure the gun o' that wake bate everything ever I seen." About twelve the chat and laughter of our wake was fast subsiding, and we heard a man say, "Come along, Pat, out o' that, they're getting paceable now;" there was no keening, and it had more the air of a rural conversation than anything I can liken it to. The people all say the wake is going rapidly out of use.

The police lounging about in all the little villages has rather an unpleasant appearance to an English eye; and their presence in church is sometimes curiously manifested. One Sunday there was a pause just before one of the psalms began, and as the singing is of the most awful description, when I saw the sexton whisper to a great long policemen, and that he and another Goliath in green immediately left their seats, and proceeded up the aisle, I concluded the clerk, who acts as precentor, wanted to strengthen his choir, and wondered whether my ears would endure the increased din the men of war would make; but they stopped just short of the clerk's desk, and then returned down the aisle, nobody looking at them or their proceedings. So I was greatly surprised to see a little drunken man in their grasp, whom they flung from them when they reached the door, shut the door, and stalked back to their seats. I don't know whether I was most surprised by the interference of the *polish*, as they call them, or by the *nonchalance* of the people. This was the only drunken man I had seen at the end of my first three months of residence.

The police are respectable-looking men; very regular at church, and always in proper time. The irregular arrival of the congregation is very unpleasant:—to the very sermon persons continue dropping in, and they enter and establish themselves with perfect satisfaction.

One of the police duties, of course, is to clear out the public-houses, especially at fairs; and it is very satisfactory to see the calm quiet decision with which they perform the duty. When I was first in Ireland there was a strong feeling against the Peelers, as they were then rather sneeringly called,—so strong, as to be constantly apparent to us in our rapid progress. Now at the end of several months' quiet residence, I have neither seen or heard of any ill feeling existing towards the police throughout this part of the country.

LONDON:
JOHN WILLIAM PARKER, WEST STRAND.
PUBLISHED IN WEEKLY NUMBERS, PRICE ONE PENNY, AND IN MONTHLY PARTS, PRICE SIXPENCE.
Sold by all Booksellers and Newsvenders in the Kingdom.

THE

Saturday Magazine.

No. 617. FEBRUARY 12TH, 1842. { PRICE ONE PENNY.

ICELANDIC SKETCHES. III.

NATIVES OF ICELAND WEARING THE NATIONAL COSTUME.

3. Sketch of the Inhabitants.

The Icelanders are the genuine descendants of the old Scandinavians or Norsemen: they are rather tall, of a frank open countenance, a florid complexion, and yellow flaxen hair: the women are shorter in proportion and more inclined to corpulency than the men; "but many of them," says Henderson, "would look handsome in a modern European dress." In youth, both sexes are generally of a very weakly habit of body, which is the necessary consequence of the want of proper exercise, the poorness of their living, and the dark and confined nature of their abodes; yet it is surprising to notice the great hardships they are capable of enduring in after life.

There is perhaps no country in the world where the pursuits and modes of life of all the inhabitants are so little diversified as in Iceland. The whole population is employed in rearing cattle, or in the fisheries: nor do there exist any *townsmen* except the small number of traders at Reikiavik, and a few other trading establishments. No manufactures are carried on as a trade. Every branch of industry is domestic, and confined chiefly to articles of clothing; such as wadmel or coarse cloth, gloves, mittens and stockings. The peasants are generally ingenious, and fabricate such articles of furniture as their simple cottages require: some even make trinkets of silver, &c., and fabricate snuff-boxes and a few other articles from the walrus tusks: they also forge implements of iron

The melancholy character of the climate and scenery has peculiarly impressed the minds of the people.

Dwelling in desolate places deprived of almost all vegetation, in dark miserable houses where the light of day can scarcely penetrate, amidst scorched rocks of rugged lava, or inclosed between the raging sea and the black cliffs, they become serious, quiet, humble, and little disposed to exert themselves, unless impelled by necessity. Influenced by these causes the Icelander of the present day closely resembles his native land, where the most destructive fires are concealed beneath its snow-clad rocks. Still and unmoved, they account it shameful to be betrayed into any violence, or to intermingle their conversation with those gestures so common in more southern countries.

But when once roused they are capable of great exertion, fatigue, and adventurous exploit, and are ready to face danger in every shape. True courage, which is never so well displayed as in long-continued patience and endurance, forms a striking feature in their character. Hospitality is also among their virtues, and although they have but little to give, they give that little freely: when the visitor receives a glass of milk or a cup of coffee at their hands, he perhaps little thinks that he is depriving a whole family of an essential article of food, or diminishing the little store which had been so carefully amassed for some family festival. Patriotism is another marked feature in their character:—wild, dreary and desolate as is their island home, yet they are devotedly attached to it, and home-sickness is as common among the Icelandic wanderers in another clime, as among the children of the Alps.

Piety is no less a distinguishing feature in their character, the majestic scenery of this wild land forcing home to the soul the littleness of man, his incompetency to struggle with the mightier powers of nature, and his dependence on some higher Being. Hence those of their ancestors who rejected the cruel and absurd mythology of the Edda, did not fall into total unbelief, but turned to the worship of that God, unknown though his name might be, who created the sun. And the same spirit still animates their descendants, who, recognising the hand of Providence in all the occurrences of life, bear with resignation the numerous calamities to which they are exposed.

Christianity was introduced in the year 1000, and though combined with the superstitions of the age, and subsequently with the equally dangerous errors of popery, yet its influence was beneficial on the manners of the people During the last three hundred years the Lutheran church has been the established form. The island is divided into parishes under the spiritual jurisdiction of a bishop, resident at Reikiavik or Langanes. Under him are nineteen provosts, or deans, whose duty it is take charge of the moral and religious character of the theological students within their districts. The parishes are served by ministers, who perform divine service according to a ritual which is a translation of the Danish liturgy. The number of parochial clergy is 184, but many of them have ordained assistants. These have to supply 305 churches and a population of 50,000, scattered over 4000 or 5000 square miles. The bishop alone is paid in money: the rest of the clergy being supported by the produce of their farms, by tithes and church offerings paid in kind. Indeed, during six days of the week the clergyman is a farmer, a fisherman, or a mechanic, and on the Sabbath only can he appear in his proper character. Nothing is more common than to find him in a coarse woollen jacket and trousers, or skin boots, digging peat, mowing grass, and assisting in hay-making. The clergymen are all blacksmiths, and the most skilful farriers in the island. A smithy is attached to every parsonage house, and should any one of the numerous horses belonging to the congregation have lost a shoe, or be likely to lose one, the pastor kindles his little charcoal fire and shoes his animal.

The education of the clergy does not greatly differ from that of the other inhabitants the elementary portion being conducted at home, and the course completed either by private study, or at the school of Bessestad. The students in this school, mostly peasants' sons, are from forty to fifty in number, and reside there eight months in the year; during the other four months they are assisting in the rural labours at home. The instruction at this school comprises theology, Latin, Greek, Hebrew, Icelandic, Danish, history, geography and mathematics. When duly qualified they are licensed by the bishop to preach; but this object being attained they do not consider their studies to have terminated.

Compelled to take up their abode in some solitary place, far from all intercourse with congenial spirits, they are apparently deprived both of the means and motives for mental cultivation. No stronger instance of that inherent activity of the human mind, which makes idleness the greatest of evils, can be produced than the number of Icelandic clergymen who, amidst all discouragements, continue labouring at works which they can hardly conceive will ever see the light, or procure to them either profit or fame. The long continuance of winter may partly account for this fact, there being no other means left of escaping the weariness of the protracted gloom; but it is principally to be ascribed to the peculiar mental constitution and habits of the nation*.

The education of the people is, as we have said, conducted at home by the parents: the clergyman visits each family from time to time, and examines the young pupils. Indeed, he has the power of preventing the marriage of any female who cannot read. The information thus acquired includes history in its most extended sense, languages, and the elements of many departments of knowledge; and it is not uncommon for many a peasant to write Latin not only with accuracy but even with elegance.

Our frontispiece will convey a general idea of the dress of the Icelanders, which our readers will agree, is far from being inelegant. Their houses never exceed one story in height: the walls are built of drift wood, of stone or lava, to the height of about four feet. The roof is often constructed of whale ribs, (which are more durable than wooden rafters,) and covered in with turf: this yields its annual crop of grass and is carefully cut during the hay-making season. From the door a long passage conducts to the principal room where the family sit, eat and sleep. The kitchen, dairy, and other offices are attached to this room. In most houses, glazed windows are unknown: holes in the roof covered by a thin skin admit light, and one hole left open affords egress to the smoke. The beds consist of open frames filled with sea-weed, or feathers, over which a few folds of wadmel and a parti-coloured counterpane are thrown. The floor is the damp earth; and the bones of the whale or a horse's skull furnish seats.

Some of the articles of the Icelanders' food were mentioned in a former article. A favourite beverage with them is sour whey mixed with water, and they seldom travel without a supply of it. Butter, however, is the chief article among the products of each little farm, and of this they eat largely. They esteem it most when by being kept for several years, it has attained a state of rancidity which would cause us to reject it. Mackenzie says, "The smell and taste of the sour butter are very disagreeable to English palates, though Icelanders delight in it. When there is a scarcity of butter, the people eat tallow; I have seen children eating lumps of it, with as much pleasure as our little ones express when sucking a piece of sugar-candy."

The employments of the Icelanders are regulated by the seasons, summer and winter, and nowhere, perhaps, is the change more complete. In winter, the family rises about six or seven o'clock. One is sent to look after the sheep, another to attend the cattle; some are busy making ropes of wool or horse-hair; one is in the smithy making horse-shoes and other articles. Spinning is performed

* *Edinburgh Cabinet Library*, article "Iceland."

with a spindle and distaff, and sometimes with a wheel; some, both men and women, knit and weave, and others prepare sheepskins for fishing dresses. While so many are thus variously occupied, one of the party generally reads aloud, in a singing tone, some old saga or history. As the reading proceeds remarks are made, and questions, arising from the story, proposed. Many wandering historians travel, like the bards of old, from house to house, and recite their tales of the olden time. Books being few, the custom of lending them is very common; and the only opportunity the peasants have of exchanging their libraries is when they meet at church, where during the most inclement part of the season, a few always contrive to be present. Many of the books thus lent are copied by the borrower in the most correct and beautiful manner; and it is greatly to be regretted that a people so devotedly attached to improvement, should be so ill-supplied with the means. A printing-press has long been established at Videy, where the holy Scriptures, psalters, and various religious books are printed, together with selections in general history, and various tracts of useful instruction, but the supply is inadequate to the wants of the people.

One of the earliest summer employments is fishing, and the utmost industry is required to insure a winter's store. Fishing is carried on in open boats, with lines and hooks. When leaving the shore, the men offer up a prayer for good success, and commend themselves to the Divine protection in a simple hymn. The fish taken is cut open, prepared, and dried; no part is wasted: the head is eaten fresh; oil is extracted from the liver; and the bones are used for fuel, or else boiled, and given to the cows for food.

About the middle of July the operations are transferred from the coast to the interior. The grass is fully grown, and on the success of the hay-harvest depends much of the subsequent prosperity of the grazier. The owner of grass land is so anxious to "make hay while the sun shines," that he procures as much assistance as possible, and pays for it at the rate of thirty pounds of butter per week.

Preparing turf; collecting the sheep, which during summer are allowed to run wild on the mountains; repairing houses against the winter; storing turf and wood; manuring lands, &c., are operations which follow close upon harvest; but among the other summer employments there is generally a journey to be made to one of the Danish stations, to barter home produce for the comforts or luxuries of more favoured lands. Every Icelander is very fond of travelling, and looks forward to a journey with delight. The journey is performed on horseback, and the various goods conveyed in the same manner. The natives usually travel in parties, and form their horses into a line, attaching the head of one to the tail of another. There being no inns, tents and provisions must be provided before starting. The places of rest are marked on the wild heaths by heaps of stones, the bulk of which every traveller thinks it his duty to augment. On his arrival in the vicinity of the town the Icelander pitches his tent, and leaving his horses and goods proceeds thither alone, visiting all the merchants and examining their wares.

It is only after having gone through the whole that the cautious native completes his bargain, in which he is, nevertheless, but too often cheated; the merchants taking care that there shall be no scarcity of brandy, a small quantity of which soon dispels the timid prudence of the poor fisher. In these moments of excitement, the produce of the winter's labour, that was to provide necessary comforts for a whole year, is too frequently squandered. But even when intoxicated, the native goodness of their heart displays itself; there is no fighting or quarrelling, no noise or tumult, but catching each other by the hand, they embrace with the greatest affection.

In concluding these sketches we feel that very much remains untold; but if we have succeeded in awakening the curiosity of the reader respecting this wonderful land and its singular inhabitants, he will be well repaid by a further inquiry.

An art so important to mankind, as the working of metals, must soon have commanded their attention, and been carried to some degree of perfection. Hence we read before the Flood, of Tubal Cain, who was an instructor of every artificer in brass and iron. What was the effect of that great catastrophe on the useful arts, is unknown. Some intimations gathered from the ancient poets and historians would lead us to infer, that the art of working metals, though not unknown, was extremely limited. This remark applies particularly to iron, which is extracted from the ore with more difficulty than most other metallic substances. Barbarous and semi-civilized nations are found, who have been able to extract the more precious metals, but have never obtained iron. The estimation in which such a people hold this substance, and the eagerness with which, when a ship arrives, they inquire for it, might convey a useful lesson to those who are accustomed to regard it as of little value. The art of working iron was probably introduced into Britain by Julius Cæsar.—Dr. Potter.

THE CAUCHA PLANT.

Some parts of these ruins present a most picturesque and unique appearance, which is occasioned by the twistings and twinings of the Caucha trees about them, often forming around a broken pillar or arched entrance, a perfect casing of the most complicated net-work, the great force of which, as the roots gain thickness and shoot upward, is sufficient to rend asunder the thickest masonry. I saw here a huge mass of such masonry, from, probably, eight to ten tons weight, completely separated from the main body, and raised a full foot from the foundation.

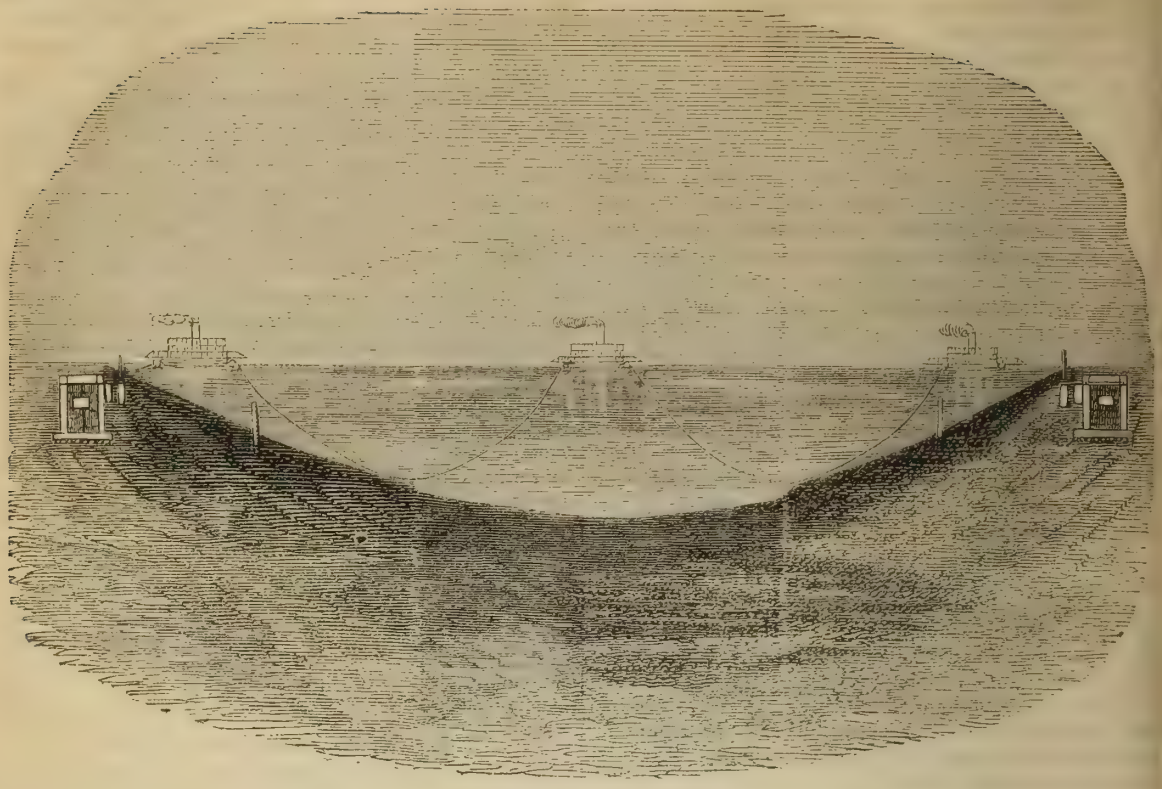
The neighbourhood of this tree is much dreaded, for should the smallest tendon once gain insertion into some slight rent or crevice in the wall of a house, it will be sure to destroy it, unless prevented in time. They also climb up to the tops of other trees, and other crush the largest of them, and run sometimes along the surface of the ground to an almost incredible distance, destroying every other plant in their course.—Steuart's *Bogota*.

THE NORTH AMERICAN INDIANS.

In war and in hunting there is no being more untiring than the Indian. He will spend days and weeks in search of an enemy. If in the course of the travel he should meet with a strange track crossing his path, his journey is at an end, until he has satisfied himself whether it is that of a friend or a foe. If it is ascertained to be that of an enemy, and if there is any prospect of gaining a scalp, the main pursuit gives way to this. He follows upon the trail, rapidly and surely, and nothing is left undone to insure the successful accomplishment of his purpose. He endures fatigues of all kinds; fasting and peril are unheeded by him; he has but one aim: it is murder. There is but little chivalry in Indian warfare. The pursuer steals like a snake upon his foe. He gives him no warning—no opportunity to resist his fate. Often the death-scream of the victim is simultaneous with the crack of the rifle that gives him the first notice of a foe.

In peace, and in his own village, the Indian is a different being. He lounges about listlessly: he will sit for hours watching the children at their games, or will stop at the different lodges, to hear the floating rumours of the town. Sometimes a knot of five or six will gather together, for the sake of talking over their own domestic grievances, and abusing their wives behind their backs. Others will assemble in the prairie, and relate to the young men their exploits in battle; their success in hunting; the deeds of the different noted men of the village, always winding up with the injunction of, "Go thou and do likewise." At a little distance from them a single warrior may be seen lolling on the grass, warming himself in the sunshine, and drawling out a dull, sleepy song, with an air of the most perfect indifference to all things past, present, and to come. Further on, two or three may be observed strolling along the summits of the different prairie hills, and occasionally keeping watch over the neighbouring country.

In war an Indian is all activity, the creature of excitement; but there is not a more listless being in existence, when this grand object does not call into play the latent energies of his nature.—Irving's *Indian Sketches*.



FLOATING BRIDGE OVER THE HAMOAZE, PLYMOUTH.

THERE is a steam-boat now plying across the Hamoaze at Plymouth, which, from many circumstances connected with its arrangement, may be deemed a floating-bridge. Mr. Rendel, the engineer who constructed it, communicated an account of it to the Institute of Civil Engineers, from which we derive the following particulars.

The Hamoaze is the lower part of the river Tamar, where it disembogues into Plymouth Sound; and at the point where it passes between Devonport and Torpoint, the one on the Devonshire side, and the other in Cornwall, the width is about half a mile. About fifty years ago the neighbouring land-owners obtained an act of parliament, authorizing them to establish a ferry at this part; and this ferry became in time of much importance, insomuch as to give rise to the building of many houses on both shores. At length about twelve years ago, a company resolved to establish a steam-boat of a peculiar construction, called a twin steam-boat, such as had been used with success in Dundee; but the strength of the tide at the Hamoaze, combined with other circumstances, caused the attempt to fail. Mr. Rendel was then applied to, to construct a kind of floating-bridge similar to one which he had before made for crossing the estuary of the Dart, at Dartmouth. He considered the nature of the difficulties, formed his plans, and built the boat-bridge, which was opened to the public in 1834.

It consists of a steam-boat whose head and stern are exactly alike, and which has neither helm, sails, paddle-wheels, nor oars. Its path across the river is marked for it by two strong chains, extending from shore to shore; and it will be convenient to describe the arrangement of these before describing the vessel. These chains, each of which is considerably more than a half a mile in length, are formed of carefully shaped links, made from iron one inch in thickness. They are laid parallel to each other, about fourteen feet apart, and lie along the bed of the river from shore to shore. Their ends are not attached to fixed moorings, but to weights suspended in shafts sunk on each shore: the shafts are twenty feet deep; and the weights suspended in them from the ends of the chains consist of cast-iron boxes loaded with about five tons weight.

We have said that these chains lie along the bed of the river; but it would be more correct to say that they are long enough so to do, if they were not attached to the boat. In practice both chains pass through the boat, and pass over the peripheries of wheels which are set in motion by a steam-engine: each link of each chain catches in a cog in the wheel, and as the wheel continues to rotate, one of two things must happen, either the wheel must drag the chain along, or the chain must drag the wheel and boat along. The former cannot take place, because the chains are heavily loaded at the end; and the boat therefore moves, the cogs in the wheel catching successively into the links of the chains. If no ships or boats were passing up or down the Hamoaze, the chains might be stretched nearly horizontal, and the boat propelled more readily; but as a free passage must be left to vessels, the chain is made long enough to hang down in a double festoon, one between the Devonport bank and one end of the boat, the other between the Torpoint shore and the other end.

The boat, or as it is more customarily called, the *bridge*, is a large flat-bottomed vessel, nearly as broad as it is long, and divided in the direction of its length into three portions. The length is about fifty-five feet, and the width about forty-five. The central division, occupying about one third of the whole vessel, is occupied by the engine-house and machinery, while the side divisions form decks on which carriages and other vehicles, as well as horses and cattle, can be placed during their conveyance across the river: so that a row of carriages might be ranged along each deck, having the engine-house on one side, and a protecting rail on the other. The foot passengers are accommodated on cross decks extending being the two side decks, at each end of the vessel.

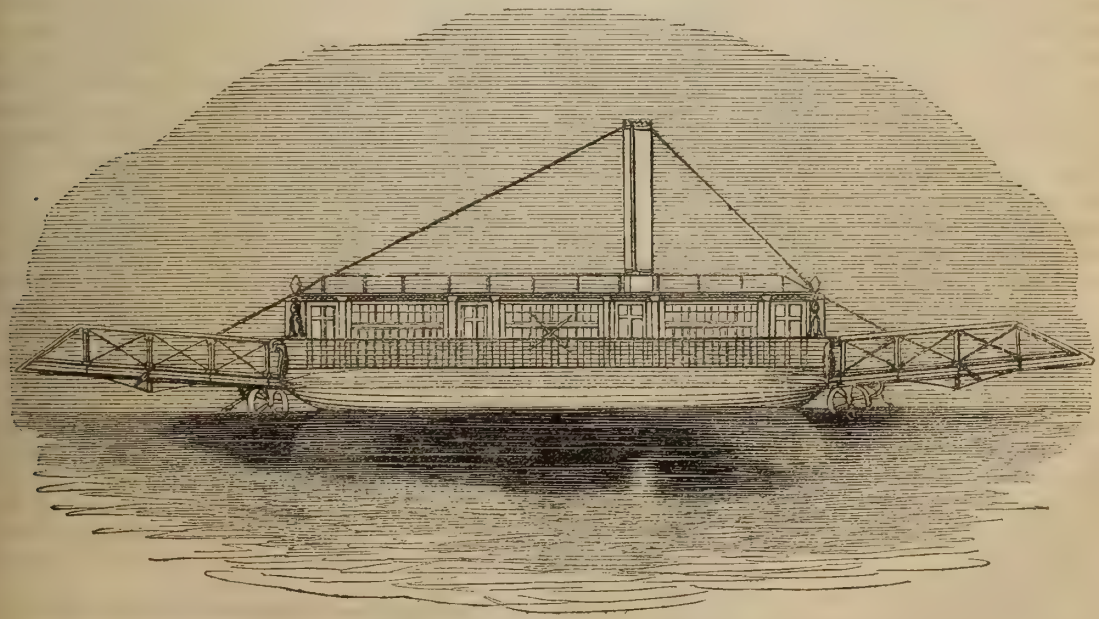
The arrangement by which carriages and horses are taken on board is very ingenious, and quite different

from anything known in common steam-boats. It is by means of four drawbridges or platforms, slung two at each end of the vessel, in a line with, and as a kind of continuation of, the decks. These draw-bridges are of the same width as the decks, to each end of which they are hung by strong bolts or hinges. The length of each platform is twenty-five feet; and it is suspended at any angle by means of chains passing from its extremity to the engine-house, where they can be wound up or down as occasion requires. When the bridge is in the act of crossing the river, the platforms make a slight inclination upwards, and are kept unoccupied, but when carriages, horses, or passengers are to be embarked or disembarked, the platforms are lowered. The landing-places on each shore are simple planes, inclining from low-water mark to two feet above high-water-mark, at an inclination of about one foot in fourteen. As the bridge approaches the landing-place, the draw-bridges or platforms at that end are lowered till they touch the plane: and the draught of water at the bridge, the projection of the draw-bridge, &c., are so regulated that carriages and horses are embarked or disembarked dry, considerably above the water mark; while the bridge is at the same time all afloat, and out of danger of grounding or drifting.

The central division of the bridge is chiefly occupied by the machinery connected with the engine. There are two steam-engines, which by means of cranks turn a horizontal shaft, on the ends of which two vertical wheels are fixed. These wheels, called the chain-wheels, are nearly eight feet in diameter, and have their peripheries studded with cogs or projections, which are gauged to the links of the chains. As the links in the chain succeed each other in exactly the same order as the cogs on the wheel, it follows that the velocity of the bridge is about equal to that of the chain-wheels, viz., about three hundred and twenty feet per minute. After passing over these wheels, the chains descend through the engine-room at an oblique angle, and pass over iron sheaves or wheels about three feet in diameter, for their support and guidance; and to prevent the accumulation of sea weed and mud in the engine-room the chains are cased off in their passage through the bridge.

It may not perhaps be apparent at first sight why the employment of these chains is necessary, and why a common steam-boat with paddles would not suffice. The advantages of the present arrangement are, however, many. By employing the chains as a guide from shore to shore, the passage by the bridge is rendered safe by night as well as by day, and in rough weather as well as fine; whilst by the employment of them as a medium through which motion is given to the bridge, a command is obtained over the motion which enables the man at the engine to start, stop, and move forward or backward, with a facility and rapidity that could not be obtained by any other means. These advantages are found of great value in the approach to and departure from the landing-places, both in the greater ease with which these operations are effected, and in enabling the whole conduct of the bridge to be regulated by two men, one to tend the engine, and the other to lower and raise the drawbridges, give the signal for stopping the engine, &c. The services of a steersman are quite unnecessary, for the vessel or bridge never swerves from its direction at right angles to the length of the river: all ordinary vessels draw up with the sides parallel to the shore, for embarking and disembarking passengers; but this bridge always presents its ends towards the shore, one end being invariably directed towards the Devonshire-shore, and the other towards that of Cornwall. The draught of water, when the bridge is full of carriages, is only two feet six inches, so that it may almost be said to lie on the surface of the water; the bottom of the vessel or bridge has no keel, and is almost perfectly flat for thirty feet of its width, curving up gracefully towards each end.

The bridge crosses the river four times in an hour, twice from Devonport to Torpoint, and twice from Torpoint to Devonport. The time of passage is eight minutes at high tide, when the width of the estuary is 2550 feet; and seven minutes at low tide, when the width is 2110 feet. The average passage is therefore seven minutes and a half, which leaves an equal space of time for stoppages at the landing-places, since four passages of seven and a half minutes each, and four stoppages of equal duration, make up the hour. The passage is made from an early hour in the morning till late in the evening, the traffic not being carried on during the night, except under special circumstances. The tolls are let to a yearly tenant, who, for a certain annual sum paid to the proprietors, receives all the proceeds of the bridge, the proprietors paying the current expenses of the bridge. It is stated by Mr. Rendel, as an instance of the efficiency of the plan, that during four years the bridge had not been interrupted in its regular course of working for more than an hour at any one time, and even that not more than twice or thrice, although two very rough



winters occurred in the four years. The chains only broke three times during that period, from a defective link; but these breakages occasioned the delay of a few minutes only, as the plan is to continue on one chain till night, when in the space of an hour the broken ends can be picked up by a grapnel from the bridge, and shackled together. If both chains were to break in one day, a longer delay would be unavoidable; but this has never happened, and hence arises one of the advantages of using two chains instead of one.

In order that the bridge may undergo a monthly inspection, for repairs, &c., there are two built exactly alike, which work alternate months, each bridge having its own chains, and being altogether independent of the other. For two years there was only one bridge; but the employment of two has since been found more economical than that of one, from the great facility which it affords for repairs, &c. The cost of both bridges, their machinery, double sets of chains, the landing-places and balance-weights at each end, &c., was about 9000*l.*; and the income derived from the use of the bridge is very liberal. The singular appearance of this boat-bridge may be imagined when we state that three four-horse carriages, one pair horse carriage, seven saddle-horses, and sixty foot-passengers, have all crossed on it at once; neither horses nor riders being at all detached from their places in the carriages.

Of the cuts in this article, the first presents a section across the Hamoaze, with the bridge to different parts of its passage, and exhibits the position of the chain in the water; while the second shows on a larger scale the bridge with its platforms.

ON WILHEM'S METHOD OF TEACHING SINGING,

ADAPTED TO ENGLISH USE, UNDER THE SANCTION OF THE COMMITTEE OF PRIVY COUNCIL ON EDUCATION,

BY JOHN HULLAH.

III.

IT has often been asserted that the human voice is the finest musical instrument in the world; and had we been at all dubious on this point, a visit to Mr. Hullah's singing-school would have been sufficient to convince us of the truth of the assertion. The rich volume of sound produced by the harmonious blending of so many voices might be said to proceed from one magnificent instrument, under the guidance of a master-hand.

In listening to the exercises of the pupils at Exeter Hall, we were particularly struck with their correctness as to *time*. Those who have studied music are well aware of the importance of this department; and those who have attempted to teach it can testify to the difficulty of inspiring their pupils with a true *feeling for time*. The success which has attended Mr. Hullah's efforts, in this particular, assures us of the value of the system on which he labours, as well as of his skilful and unwearied application of it. It is observed in the *Manual* prepared by that gentleman, that a feeling for time "is much more rapidly and easily communicated by the sympathy of numbers than by the most careful and analytical process of individual instruction." Yet without trusting to this sympathy alone, the system which we are considering employs other means to effect the desired end. The pupils, who are seated with their books before them, employ their hands in "beating time;" four movements being made,—down, left, right, up. The master explains that all pieces of music are divided into small portions called *bars;* all of which in any one musical passage are exactly of the same length in point of time. He then explains the difference between "common time" and "triple time;" shows how many crotchets, quavers, &c., are included in each bar; and determines how many movements of the hand are to be made in each bar, according to its length. All the pupils move the right hand in exactly the same manner, and at the same moment, whereby a habit is acquired of making these movements in an equal-timed manner. To the eye of a stranger the effect is novel to see the hands of two or three hundred pupils waving to and fro in this manner, while they are singing; but the perfect accuracy which is thereby insured, shows the utility of the practice. Indeed, it may be said, that the education of the voice, of the ear, of the memory, and of the hand, all form parts of this system.

The pupils are exercised in the art of keeping time by what is called "reading in time." A tune is marked on a tablet or board, and the pupils are required to name all the notes, (*sol, fa, ré, &c.,*) and to dwell on each for a length of time equal to the proper length of the note. This kind of exercise is frequently made to alternate with that called *solfaing*, so that the pupil is gradually trained to accuracy both in *tune* and in *time*. The act of sinigng, too, is varied in three different ways, called for distinction *solfaing*, or the sounding of each note to its proper name; *vocalising*, or sounding each note to the same vowel; and *singing*, or the combination of words and notes.

By such steps as these the pupil is gradually introduced to the performance of simple, but regular, pieces of music, which are very ingeniously arranged. The names of musical *intervals* are first explained: for instance, the interval between a note and the next one to it is a *second;* between a note and another two steps distant is a *third*, and so on; the interval between any note and the note of the same name above or below it being called an *octave*. Then follows a series of exercises and simple songs, in which no interval larger than a second is employed; to which succeeds another series comprising both seconds and thirds; then another including fourths; and so on, gradually increasing the variety of musical intervals practised by the pupils. These lessons are varied by explanations of several terms used in music, such as *crescendo, diminuendo*, and the like; and by instruction in the modes of producing expression in music. The exercises and songs for the development of this part of the course were composed chiefly by M. Wilhem and Mr. Hullah, and exhibit much care and skill in their adaptation to the object in view.

The exercises are varied, too, by singing in parts, that is, the pupils are formed into two sections, one of which sings one series of notes, the other section another series; the two being of course so arranged as to harmonize when sung together.

Hitherto the pupil has been told nothing about *flats* and *sharps*. He has received a large amount of valuable instruction, but all given in the natural key of *Do* or *C*. The pupil is now informed, that for variety of expression as well as for adapting music to voices and instruments of different compass, it is necessary to *transpose*, that is, to make some other note, instead of *do*, the lower one of the scale. The curious and somewhat intricate manner in which flats and sharps are required for this transposition, is then explained, aided by an extension of the *manual* symbols before spoken of. Hitherto it has been found sufficient to point to a finger when a particular note is to be indicated; but now, attention is directed to the part of the finger chosen. If the finger be touched in the middle, it implies a natural note; if at the root of the finger, a sharp note; if at the tip a flat note. The master explains how these flats and sharps give rise to a new kind of scale called the *Chromatic* scale, containing thirteen sounds, five more than are contained in the *Diatonic* scale. He then directs his pupils to a new series of exercises in which the chromatic scale is brought into constant use.

It was explained at the beginning of the course that the Diatonic scale is termed major or minor according to the position of the two semitones in it; but all the

practice hitherto has been in the major scale. Now, however, the nature of the minor scale is explained to the pupils, as being productive of a plaintive and melancholy class of tunes; and exercises are gone through for the practice of this mode. Another step in the process of instruction, is when the master explains to the pupils the meaning and object of the *bass clef*. Hitherto all the exercises and songs have been given in the treble clef, such as is used for the right hand music of the piano-forte; but the pupils are now prepared to practise the bass clef, such as is used for the left hand music of the piano-forte. Hence arises a new system of exercises, in which a piece of music is arranged in two parts: one for the treble or high voices, and placed with the treble clef; and the other for bass voices in the bass clef. In some cases the air is arranged in three parts, two being for trebles and one for basses.

Such is a brief outline of the system adopted, so far as it regards the method of instruction in one large class, and so far as the first course of instruction extends; the second course not being yet published. It will readily be understood that many items of a minor character are taught to the pupils, which we have not alluded to in the foregoing sketch. The broad features of an education in singing are taught nearly in the order we have stated. Each lesson lasts about an hour. The master gives out the page of the book to which the pupil is to refer, and determines what exercises are to be gone through. The eye, the ear, the voice, the memory, the hand—all are kept in constant use by the judicious interchange of exercises, which sometimes relate to *time*, sometimes to *tune*, sometimes to *expression*. As an example of the mode in which the exercises are varied, we may mention the course pursued on one occasion when we were present.

After various preliminary exercises, the attention of the pupils was directed to a black board on which were chalked the notes of a tune harmonized in four parts. Mr. Hullah directed the pupils to select one of the parts and to "read it in time," that is, to name the notes and to make the proper pauses on them according to their value as quavers, crotchets, &c. The same process was then repeated for the other parts of the harmony. One of the parts was then *solfaed*, that is, sung correctly as to pitch, but with the names *do, ré*, &c., instead of the words of the song. A similar plan was pursued with the other parts of the harmony. The pupils were then divided into two sections, of which one sang the first treble and the other the first bass. The sections were afterwards increased to four, of which two sang first and second tenor, and two, first and second bass. The proper words were now added; and lastly, the whole was sung, harmonized in four parts, with proper attention to *expression*. The effect of this final exercise was extremely rich and beautiful, and must have been the result of such a system only which, while it conveys sound instruction by easy stages of progression, also excites an untiring interest and friendly emulation among the pupils, and thus renders pleasurable the efforts of those who teach as well as of those who are taught.

The class, or rather school of classes, at Exeter Hall, as we have before observed, consists of masters or teachers, and mistresses of elementary schools; and the object is to prepare them for imparting similar instructions at some future time to the scholars in their own schools. It may therefore be desirable to attempt a brief sketch of the *monitorial system* which it is proposed to introduce into these schools. In the first place, the master will select a certain number of scholars, who seem best fitted for the office, to act as *monitors*; these he will instruct much in the same manner as the schoolmasters themselves are now being instructed at Exeter Hall. The number of monitors will be so arranged as to give eight or ten scholars to each. It is not necessary for the monitors to go through a complete course of instruction before they become instructors; but when they have acquired a certain amount of knowledge they will be competent to commence with the instruction of classes placed under their respective charge. The monitors, while being instructed, are arranged opposite a board on which tablets are placed in succession. These tablets are large sheets of paper on which are printed exercises and figures similar to those contained in the octavo volume. They are intended to supersede the necessity of supplying each learner with a book, since each tablet can be distinctly seen by all the members of the monitors' class, and may be similarly used in the other classes which may afterwards be formed in the school.

When the monitors have attained a certain degree of proficiency, classes or "drafts" are to be formed;—not simultaneously, but in succession, so that one set of tablets may serve for the whole school. When the "first class" (consisting of eight or ten pupils) has mastered the contents of four or five tablets, a "second class" is formed, which is conducted over the same ground, while the first class proceeds with the more advanced tablets. In this way successive classes are formed, until all the scholars in the school, or such of them as are to be taught singing, are entered in some or other of the classes. To preserve order and system in the arrangements, certain ingenious contrivances are proposed—such as a series of "class lists," each containing spaces for the introduction of the names of all the pupils in some one class: to these belong "name slips," *i. e.*, small strips of pasteboard, on which the names of the pupils are to be written, and which are slid into the blank spaces of the "class lists," according to the class to which a pupil belongs. "Progress tables" are tabulated papers, on which is recorded the progress of each class up to any stated time, such progress being estimated by the number of tablets which have been brought before the class.

The most advanced monitor will be selected as "superintendent singing monitor." This favoured pupil (male or female, according as it is a boy's or a girl's school) will look out the proper tablets, progress tables, and class lists for the day, and deliver them to the respective monitors. This is to be done ten or fifteen minutes before the classes assemble, in order that the monitors may look over the tablets, and refresh their memories before the lessons commence. When the classes assemble, the superintendent singing monitor is stationed in a conspicuous part of the school to direct and control the proceedings. The master of the school superintends the whole, and tests the progress of all the classes by frequent examinations at short intervals. Thus, while the pupils look to the monitors for instruction, the monitors look to the master for further progress.

The monitorial plan is a very interesting and important part of Wilhem's method, but the success of it yet remains to be proved. Whether the sub-classes can be taught by monitors chosen (as in Dr. Bell's system) from among the children themselves, or whether assistant-teachers of maturer age will be found necessary, is a problem yet to be solved. Experience will settle this, as well as other points arising from the novelty of the experiment; but we may be allowed to look forward with much confidence to good results from so successful a commencement.

There is another feature in the system which must not be overlooked, that is, the character of the sentiments imbibed by the young persons while singing in their classes. The words selected to accompany the different exercises are, during the first part of the course, adapted chiefly to the intelligence of children, and are entitled "school songs." The words adapted to the second part of the course are to be entitled "labour songs," as inspiring cheerful views of industry; and to these will succeed religious music.

We have examined the tendency of the songs taught in this method, and have been much pleased with their simplicity, and with the general tone of sentiment throughout. It may not be inappropriate to close our notice with a few specimens of these songs.

O! COME YE INTO THE SUMMER WOODS.

O! come ye into the summer woods,
There entereth no annoy:
All greenly wave the chesnut leaves,
And the earth is full of joy.
I cannot tell you half the sights
Of beauty you may see,
The bursts of golden sunshine,
And many a shady tree.
O! come ye into the summer woods, &c.

THE LARK.

From his low and grassy bed,
See the warbling lark arise!
By his grateful wishes led
Through the clear bright morning skies!
Songs of thanks and praise he pours,
Filling all the arch of space;
Singing as he higher soars
Towards the throne of heavenly grace.

Small his gifts compared with mine,
Poor my gifts with his compared,
Yet I have a soul divine,
Angels' gifts with me are shared.
Wake, my soul! to praise aspire,
Reason, all thy powers accord!
Help to tune this trembling lyre
That would gladly praise the Lord!

HARVEST HOME.

The harvest moon is in the sky,
The west seems all on fire,
The corn shall all be housed and dry
Before the light expire.
From every field the wagons come,
With sheaves piled fast and high,
The reapers shout the harvest home,
The harvest home we cry.

The barn is full, the feast is spread,
The squire and hind are there:
And bare is many an auburn head,
And bare the thin grey hair.
"Great God!" they say, "whose harvests come
Thy children here to feed,
Oh! bring us to that harvest home
Where we shall never need."

EVENING SONG.

'Tis eve; our work is done:
Ere we part for the night,
With grateful looks each one,
Our master bid good night;
His kind and gentle sway
Persuades us day by day
To live in peace and love.
O how then can we prove
Our humble, humble gratitude?
Our humble, humble gratitude?

O Father, from on high,
On him thy spirit pour;
May no calamity
Approach his cottage door!
O spread his frugal board,
And may thy presence, Lord,
Through night's deep solitude,
Above his dwelling brood!
So may he, may he sleep in peace,
So may he, may he sleep in peace.

SPARE MINUTES.

MEDITATED RESOLVES AND RESOLVED MEDITATIONS.

II.

As is a wound to the body, so is a sinful body to the soul: the body endangered till the wound be cured, the soul not sound till the body's sin be healed, and the wound of neither can be cured without dressing, nor dressed without smarting. Now as the smart of the wound is recompensed by the cure of the body, so is the punishment of the body sweetened by the health of the soul. Let my wound smart by dressing, rather than my body die; let my body smart by correction rather than my soul perish

---

IT is some hope of goodness not to grow worse: it is a part of badness not to grow better. I will take heed of quenching the spark, and strive to kindle a fire. If I have the goodness I should, it is not too much; why should I make it less? If I keep the goodness I have, 'tis not enough; why do I not make it more? He ne'er was so good as he should be, that doth not strive to be better than he is: he never will be better than he is, that doth not fear to be worse than he was.

IT is the usual plea of poverty to blame misfortune, when the ill finished cause of complaint is a work of their own forging. I will either make my fortunes good, or be content they are no worse. If they are not so good as I would they should have been, they are not so bad as I know they might have been. What though I am not so happy as I desire? 'tis well I am not so wretched as I deserve.

THERE is nothing to be gotten by the world's love, nothing to be lost (but its love) by its hate. Why, then, should I seek that love that cannot profit me, or fear that malice that cannot hurt me? If I should love it for loving me, God would hate me for loving it. If I loathe it for hating me, it cannot hurt me for loathing it. Let it, then, hate me, and I will forgive it, but if it love me I will never requite it. For since its love is hurtful, and its hate harmless, I will contemn its hate, and hate its love.

As there is a folly in wit, so there is a wisdom in ignorance. I would not be ignorant in a necessary knowledge, nor wise above wisdom. If I know enough I am wise enough, if I seek more I am foolish.

IT is no marvel that man hath lost his rule over the creature, when he would not be ruled by the will of the Creator. Why should they fear man, when man would not obey God? I could wish no creature had power to hurt me, I am glad so many creatures are ordained to help me. If God allow enough to serve me, I will not expect that all should fear me.

No affliction (for the time) seems joyous, all time in affliction seems tedious. I will compare my miseries on earth with my joys in Heaven, and the length of my miseries with its eternity; so shall my journey seem short, and my burthen easy.

THERE is nothing more certain than death, nothing more uncertain than the time of dying. I will, therefore, be prepared for that at all times, which may come at any time, must come at one time or another. I shall not hasten my death by being still ready, but sweeten it. It makes me not die the sooner, but the better.

THE commendation of a bad thing is its shortness, of a good thing, its continuance: it were happy for the damned, if their torments knew end, it is happier for the saints that their joys are eternal. If man, that is born of a woman, be full of misery, it is well that he hath but a short time to live: if his life be a walk of pain, it is a blessing that his days are but a span long. Happy miseries that end in joy; happy joys that know no end: happy end that dissolves to eternity. [ARTHUR WARWICK.]

LONDON:
JOHN WILLIAM PARKER, WEST STRAND.
PUBLISHED IN WEEKLY NUMBERS, PRICE ONE PENNY, AND IN MONTHLY PARTS, PRICE SIXPENCE.
Sold by all Booksellers and Newsvenders in the Kingdom.

THE

Saturday Magazine.

No. 618. FEBRUARY 19TH, 1842. { PRICE ONE PENNY.

RESIGNATION. FROM THE MONUMENT BY CHANTREY, IN WORCESTER CATHEDRAL.

SIR FRANCIS CHANTREY AND HIS WORKS.

II.

SCULPTURE is far more laborious than painting, depending as it does on shape and expression for its fascination, and demanding an acquaintance not only with varied nature, but also with curious and delicate mechanical operations, and with that rare talent of combining the conceptions of genius with the niceties of acquired skill. The march, therefore, of the sculptor, to distinction is a long one: and with much of this mechanical knowledge, Chantrey had to become acquainted when he went to London. He had also other obstacles to surmount: the ablest sculptors in England, attached to that artificial and mechanical style imported from France and Italy, for the most part, expressed their ideas in allegorical figures; and by neglecting the simplicity and the dignity of nature, lost most of that wonderful effect which the works of genius are sure to produce when unfettered by conventional rules and the authority of predecessors. It has been well remarked, that invention does not consist in investing abstract ideas with human form, in conferring substance on an empty shade, or in creating forms, unsanctioned by human belief, either written or traditional. Much genius has been squandered in attempting to create an elegant and intelligible race of allegorical beings, but, for the want of human belief in their existence, for the absence of flesh and blood, nothing can atone. No one ever sympathised with the grief of Britannia, or shared their feelings with that cold, cloudy, and obscure generation to which she belongs.

In his twentieth year Chantrey paid a sum of money to get quit of his engagement with Ramsey; and the separation gave mutual pleasure. Authorities differ as to the time when our artist proceeded to London. One account states that as soon as he was freed from the bonds of servitude he advertised in Sheffield to take portraits in crayons: that in October, 1804, he announced that he had "commenced taking models from the life." In reference to painting, he modestly expressed himself, saying, he "trusts in being happy to produce good and satisfactory likenesses, and no exertion shall be wanting on his part to render his humble efforts deserving some small share of public patronage." Several specimens of his talent both in chalk and oil remain in the town, and are chiefly valued on account of the subsequent celebrity of the artist. Another account states, that in May, 1802, he went to London and applied himself with great ardour to study: but in a very short time we find him on his way to Dublin, intending as it is said to make the tour of Ireland and Scotland, but most probably, when we consider the scanty means of the artist, with the endeavour to establish himself either in Dublin or in Edinburgh, as a portrait painter or modeller. It appears, however, that he was arrested by fever at Dublin, and did not entirely recover for many months: he returned to London in the autumn completely cured of his travelling mania, and recommenced his studies with an application which soon displayed itself by its successful results. He had already conceived the character of his works, and only wanted opportunity to invest them with their present truth and tenderness.

After having improved himself at the Royal Academy, Chantrey returned to Sheffield and modelled four busts as large as life, of characters well known in that town, viz., the Rev. James Wilkinson, Dr. Younge, Mr. Wheat, and Mr. Hunt, a painter. He afterwards modelled the head of Dr. Chorley, of Doncaster. These performances were so skilful, that when it was resolved to erect a monument to the memory of the Rev. James Wilkinson, and Chantrey (though he had never yet lifted a chisel to marble) had the courage to become a candidate for the commission, the committee readily entrusted it to him. This seems to have been an interesting crisis of the artist's life, and helped to decide the bias of his future course. Having employed a mason to rough hew the bust, he commenced the task and accomplished it with success. This very interesting work may now be seen in Sheffield church.

Chantrey's first exhibited work on the walls of the Royal Academy, was in 1804, when he sent for exhibition a *portrait* of D. Wale, Esq. The next year he exhibited three busts, and in 1806, a bust of Bigland, the essayist. In 1808, he exhibited a model of a colossal head of Satan—"an attempt to invest this fearful and undefined fiend with character and form; eclipsed as it now is, by more celebrated works, its gaze of dark and malignant despair never escapes notice." This head still remains in his studio, and was never executed in marble. In 1809 he received his first order from Mr. Alexander, the architect, for four colossal busts of Howe, St. Vincent, Duncan, and Nelson for the Trinity House, and for the Greenwich Naval Asylum. In the same year he married at Twickenham Church his cousin, Miss Mary Ann Wale, the present Lady Chantrey, and removed to Eccleston Street, Pimlico, where he continued to reside during the remainder of his life.

In 1810, he executed a bust of Mr. Pitt for the Trinity House. The absolute nature and singular felicity of his busts now began to procure for him extensive employment. The year 1811 was that in which he may be said to have fairly commenced his career of fame and fortune. He exhibited six busts, all of them produced with a felicity at that time rare in bust sculpture. Among these was the bust of Horne Tooke, to which he communicated an expression of keen penetration and clear-sighted sagacity. The other busts were those of Sir Francis Burdett; John Raffael Smith, one of the best productions of the artist; Benjamin West, P.R.A; Admiral Duckworth; and William Baker, Esq. With the bust of Horne Tooke, Nollekins expressed his great approbation. He lifted it from the floor,—placed it before him,—moved his head to and fro, and having satisfied himself with its excellence, turned round to those who were arranging the works for exhibition, and said, "That's a very fine, a very fine *busto;* let the man who made it be known—remove one of my busts and put this one in its place, for it well deserves it." Often afterwards when desired to model a bust, the same excellent critic would say in his most persuasive manner, "Go to Chantrey—he's the man for a bust—he'll make a good bust of you: I always recommend Chantrey." He did recommend him,—always spoke of him with respect,—and sat to him for his bust.

The efforts of the artist in bust sculpture had now placed him beyond rivalship, so that when in 1811, he sent in his design for the statue of George III. proposed to be erected in the Guildhall of the city of London, it was approved of in preference to others. We have already stated, that to the study of sculpture Chantrey had added that of painting, and his pictures are said to do his sculpture no discredit; his pencil portraits are esteemed by many as admirable as his busts. It is not a little curious that this proficiency of the sculptor in the sister art, had nearly deprived London of the fine statue of the king. A member of the common council observed in committee, that the successful artist was a painter, and therefore incapable of executing the work of a sculptor. Sir William Curtis sent for the artist and said,—"You hear this, young man,—what say you—are you a painter or a sculptor?' —"I *live* by sculpture," was the reply, and the execution of the statue was immediately entrusted to him. The result was the production of a work full of ease and dignity.

He had already made some progress in this work when he was employed by Mr. Johnes of Hafod, the accomplished translator of Froissart, to make a monument,—a very extensive one,—in memory of his only daughter. This was a congenial task, and confided to his hand under circumstances honourable to English

sculpture. The design for this work has been spoken of as a production of beauty and tenderness—a scene of domestic sorrow exalted by meditation.

The object of the artist was to represent the melancholy incident of a lovely, affectionate, accomplished maiden expiring in the arms of her afflicted parents. The agonized mother presses to her lips the hand of the beautiful sufferer, thus nearly concealing her own face; while the father in calmer but not less profound grief bends over his child, and supports her dying head. Her pallet and pencils, indicative of the cultivated elegance of her mind, lie abandoned by her side, with a roll of music, on which appears the appropriate inscription:

Angels ever bright and fair,
Take, oh! take me to your care.

We are not informed how much of this design was executed in marble. In 1820, the work was spoken of as advancing towards completion; but in a recent number of the *Gentleman's Magazine*, it is stated that "a beautiful statue of Marianne, only daughter of Johnes, of Hafod, the translator of Froissart, was allowed to remain in the hands of the artist, in consequence of the calamity which overwhelmed the father."

From this period the career of Chantrey has been uneventful; "marked only by increasing perfection in his art, and the steady advance of that tide of reputation, which finally floated him to the foremost rank of British sculptors." It will be sufficient, therefore to notice a few of his principal works, since a catalogue of the whole, profusely scattered as they are throughout the cathedrals, churches, libraries, and sculpture galleries of this country, and of many of our colonies, would not only be difficult to obtain, but would occupy many pages of our Magazine.

A statue of President Blair, a judge of singular capacity and penetration, and a statue of the late Lord Melville, being required for Edinburgh, Chantrey was induced to visit Scotland. He acquitted himself with great felicity. The calm, contemplative, penetrating mind of Blair is said to be visibly expressed in the marble. This is the artist's highest praise, considering how difficult it must be to work with a poet's eye on productions which the artist's own mind has not selected and consecrated. During his stay in Scotland he modelled a bust of Professor Playfair, in which he seems at once to have caught the face and intellect—both so remarkable—of this eminent man.

Many artists (says one of Chantrey's biographers), obtain their likenesses by patient and frequent retouchings—Chantrey generally seized on the character in one hour's work. Once, and but once only, we saw a bust on which he had bestowed a single hour;—the likeness was roughed out of the clay with the happiest fidelity and vigour. We saw, too, the finished work—his hand had passed over it in a more delicate manner—but the general resemblance was not rendered more perfect.

When Chantrey was required to execute monuments in memory of Colonel Cadogan and General Bowes, and afterwards of General Gillespie, he embodied these subjects in a manner almost strictly historical, so that, from the number of the figures, and the method of treating the subject, they may be said to form historical pictures in stone. These works gave rise to the following sensible observations:—

Though the walls of our churches are encumbered with monuments in memory of our warriors, no heroes were ever so unhappy. Sculptors have lavished their bad taste in the service of government. Fame, and Valour, and Wisdom, and Britannia are the eternal vassals of monotonous art. A great evil in allegory is the limited and particular attributes of each figure,—each possesses an unchangeable vocation, and this prescription hangs over them as a spell. The art too, of humble talents is apt to evaporate in allegory,—it is less difficult to exaggerate than be natural, and vast repose is obtained among the divinities of abstract ideas! Simple nature in ungifted hands, looks degraded and mean; but a master-spirit works it up at once into tenderness and majesty.

Although his business was widely increasing, Chantrey, who neglected no opportunity of improving his talents and his taste, found time in 1814 to visit Paris, when the Louvre was filled with the plundered sculptures of Italy, and admired, in common with all mankind, the grace, the beauty, and serene majesty of these wonderful works. But his praise of French art in general was extremely limited. In the following year he re-visited Paris during the stormy period of its occupation by the English and the Prussians. On this occasion he was accompanied by Mrs. Chantrey, and by his intimate friend, Stothard the painter. He returned home by way of Rouen, and filled his sketch-book with drawings of the pure and impressive gothic architecture of that ancient city.

On his return from France he modelled "the Sleeping Children," which we have already noticed. The reward of this work was no common one—the artist received various orders for poetic figures and groups, the choice of subjects being left to his own judgment. Such commissions were new to English sculpture. But orders for busts and portrait statues came in so thickly that the hours of leisure required for poetic figures were very few.

One of his happiest productions is a devotional statue of Lady St. Vincent. The figure is kneeling,—the hands folded in resignation over the bosom,—the head gently and meekly bowed—and the face impressed deeply with the motionless and holy composure of devotion. A simple and negligent drapery covers the figure, and all attempt at display is avoided. It is now placed in the chancel of Caverswell church, in Staffordshire.

Another production, to which the trays of the Italian boys have given a wide celebrity, is the statue of Lady Louisa Russell, the present Marchioness of Abercorn, and one of the daughters of the Duke of Bedford. The child stands on tiptoe, fondling with delight a dove in her bosom,—an almost breathing and moving image of arch simplicity and innocent grace. It is finished with the same feeling in which it is conceived. The truth and nature of this figure was proved, had proof been necessary, by a singular incident related in *Blackwood's Magazine*. A child of three years old came into the study of the artist,—it fixed its eyes on the lovely marble child—went and held up its hands to the statue, and called aloud and laughed with the evident hope of being attended to. This figure is now at Woburn Abbey.

In 1816 Chantrey was elected an associate of the Royal Academy, and an academician in 1818. During this year he was also made member of the Royal Society and of the Society of Antiquaries. To the Royal Society he presented a marble bust of their president, Sir Joseph Banks; and to the Royal Academy he gave, as the customary admission proof of genius, a marble bust of Benjamin West.

In 1819 he exhibited the sitting figure of Dr. Anderson for Madras, perhaps the very best of all his statues; and a bust of Mr. Canning. During this year, in company with Mr. Jackson, R.A., he made a journey long meditated through Italy. Rome, Venice, and Florence, were the chief places of attraction: but he found leisure to examine the remains of art in many places of lesser note. He returned through France, and arrived in London after an absence of eighteen weeks. Of the works of Canova* he speaks and writes with warm admiration. In a letter to a friend he says, "Above all modern art in Rome Canova's works are the chief attractions. His latter productions are of a far more natural and exalted character than his earlier works; and his fame is wronged by his masterly statues which are now common in England. He is excelling in simplicity and grace every day." During his stay in Rome

* An interesting notice of Canova and his Works is contained in the *Saturday Magazine*, Vol. XVIII., pp. 18, 60, 66.

Chantrey, wishing to possess a portrait of Canova from the hand of his friend Jackson, obtained the permission of the Italian artist to sit to the English painter.

When the Roman artists heard that a new painter had made his appearance among them, (says Mr. Cunningham, in his *Life of Jackson*,) they went to see how he handled his subject; and there was some spreading of hands and shrugging of shoulders among them when they saw the rough, rude way in which the stranger at first dashed in the likeness: they all went away, prophesying utter failure: and even Canova himself, accustomed to see heads elaborated out by academic rules, was for a while, inclined to think he was squandering his time in sitting to Jackson. At the fifth or sixth sitting, however, he exerted all the magic of his hand, and bestowed such brilliant depth of colour, and such truth and force of expression, that the great sculptor broke out into loud expressions of astonishment, greatly to the amusement as well as delight of Chantrey, whose confidence in his friend's powers had prepared him for this result.

On his return from the Continent Chantrey modelled the bust of Mr. Wordsworth, for Sir George Beaumont; and of Sir Walter Scott, in order to gratify his love and admiration for the worth and genius of Sir Walter. This bust is admirable: the character and the genius of the man are both there. It has been stated that Chantrey had sought at first, like Lawrence, for a poetic expression, and had modelled the head as looking upwards with gravity and solemnity. "This will never do," (he said to Mr. Cunningham, when Sir Walter had left after his second sitting), "I shall never be able to please myself with a perfectly serene expression. I must try his conversational look,—take him when about to break out into some sly funny old story." As he said this he took a string, cut off the head of the clay model, put it into its present position, and produced by a few happy touches that bust which alone preserves for posterity the cast of Scott's expression.

The poet (says Mr. Cunningham) has a face as changeable and as various as the characters he draws in his works, and an expression which nothing but genius something akin to his own can hope to seize. In this remarkable bust the brow is full of thought, the eyes look through one, and there is a grave humour about the mouth which seems ready to escape in speech. The whole face is finished with the most fascinating skill. The poet sat whilst the sculptor chiselled: and there was many a merry word between them.

The subject of our frontispiece forms the principal part of a monument erected in Worcester Cathedral in the year 1825, to the memory of Mrs. Digby, the wife of the Rev. William Digby, one of the prebendaries of that cathedral. The figure is raised upon a marble pedestal, of a Gothic pattern, on which it reclines: and in the monument itself there are kneeling angels in faint relief at the hands and feet. It is stated that the expression and arrangement of the face and figure afford a "most remarkable representation of the *mind*" of the deceased lady.

CHRONICLERS have informed us, that upon the banks of the Weser, the god of the ancient Teutonic race manifested his displeasure by a kind of thunderbolt, to which, immediately afterwards, succeeded a cloud that filled the sacred inclosure. The image of the god *Busterich*, discovered, it is said, in some excavations, clearly demonstrates the mode in which this prodigy was produced. The god was made of metal. The hollow head contained water to the amount of an amphora; plugs of wood closed the mouth and another opening situated under the forehead, and combustibles suitably placed in a cavity of the cranium gradually heated the liquid. Speedily the steam generated caused the plugs to spring with a loud report, and then escaped with violence, forming a thick cloud between the god and his astonished worshippers. It appears also, that in the middle ages the monks found this to be a very valuable invention, and that the head of Busterich has performed before other assemblages besides those of the benighted Teutones.—ARAGO's *Life of Watt*.

THE BRANDY PEST.

No. III.

A Discovery.

NEXT morning we departed early, after having once more seen our unfortunate postilion. We gave him some money. He was very much affected, and a thousand times begged our pardon for the accident which had happened to us through his intoxication. He promised us never to forget the painful lesson, and for the future to avoid brandy, since through drinking he had become a miserable man. I know not whether he kept his word.

I accompanied my fellow-traveller to the next town; but here we were obliged to separate, for our roads now lay in opposite directions. We promised to continue good good friends, and to see each other again. After a cordial farewell we separated.

I thought frequently afterwards of the amiable Fridolin, and the bitterness of his fate, in the melancholy circumstances of his father's death and the loss of his beloved. I related this story to my wife and daughter, and often I was tempted to write to him, in order to know how he was; but I was afraid to open his wounds, by appearing too inquisitive. Thus more than a year passed away. After so long a silence, and as he had not written to me, I thought it almost unbecoming to address him. I did not even know whether he was still living in Switzerland.

At length I had occasion to make a journey into Germany on business, and I took my wife with me, for she was recovering from a long illness. One day, in a small town of Würtemburgh, where we passed the night, she by chance entered a room adjoining the parlour, where some dress-makers were at work. After she had remained with them for some time, she came back to me and said: "Come and see one of the dress-makers; she is so remarkably beautiful that I know no woman to compare with her."

I smiled at the enthusiasm of my wife, and said, "Will you endanger the heart of your husband by the sight of so much beauty?"

In the mean time the bustling landlady entered, and my wife asked about the beautiful dress-maker.

"Oh, poor girl!" said the landlady, "she has nothing but what she carries on her back, and is obliged to work hard for her daily bread. Silly girl! if she would not carry her head so high, she might be married to a respectable man of this town. Hecht the butcher, my neighbour, and Siebold the grocer, opposite, are honest, comfortable people, but the young damsel has refused them both: she will not very soon find another match equal to these. But, to say the truth, she is diligent and honest, is very clever in dress-making and embroidery: they say even, that she can speak French."

"From what country does the girl come?" asked my wife.

"From Switzerland, I think," answered the landlady: "she lives with an old laundress in the Kümmel Street, near Pinkelmann the smith. Her name is simply Miss Talk; but she conducts herself as if she were a lady. She speaks very little, so I suspect that her conscience is not quite pure. Some people say——but I will not repeat what bad tongues say of her."

"If the girl is a Swiss," said I to the landlady, "I should like to see her."

We went into the room, where the landlady left us. My wife entered into conversation with the dress-makers. The youngest of them, about twenty years old, deserved indeed the praise which my wife had bestowed upon her. I was surprised at the soft expression of her face, but her pale cheeks offered evidence of the existence of some silent sorrow. She did not lift up her eyes from her work. The peasant's dress which she wore could not conceal her slender figure, and the beautiful symmetry of her form. I regretted that she was so silent, whilst all the others lightened their labour by cheerful conversation. When my wife asked them whether they were all natives of the town, the eldest of them answered, "*We* are, but" (pointing to the silent girl) "she is a Swiss."

"Indeed!" said I, addressing myself to the Swiss girl; "we are then natives of the same country. From which Canton do you come, Miss?"

The girl bent her head nearer to her work, perhaps to conceal the blush which flew over her face, and said, in a soft, tender voice, "My parents were from different Cantons."

I was about to make further inquiries, when the eldest of the dress-makers said, "Lend me your scissors, Justine."

On hearing this name I thought of Walter's Justine. I looked at my wife, and she looked at me significantly. We understood each other immediately, and observed the young person more closely. Then we left the room, and when we had reached ours, my wife said, "Is this Miss Justine Talk, or Fridolin's Justine Thaly?" This question was to be decided in some way or other. We determined to find out, with all necessary precaution, whether she was indeed Dr. Walter's former betrothed, and, in that case, to persuade her to come with us, to accept the situation of companion to my wife and daughter, but without betraying to her our acquaintance with Walter. I went immediately to the old laundress, with whom Justine lived, and learnt with certainty that the fair dress-maker was indeed Justine Thaly. I hastened back to the inn, full of joy, to surprise my wife with the important news; but I was surprised to find her in company with the young lady in our room.

"Miss Thaly is willing to follow us," said my wife, as I entered the room, "but we must remain one day more in the town, that she may settle her little affairs."

I expressed to Justine my pleasure at her determination. She stood before me whilst I spoke, with eyelids modestly cast down, then opening her clear blue eyes, looked at me, and said, while a grateful but sorrowful smile played round her lips, "Do not expect too much from me. I do not know how I have deserved your favour, but I will spare no pains to render myself worthy of it. I am already too much obliged to you for taking me away from this town, which has become insupportable to me."

We remained another day in the little town, and the following day Justine sat beside us in our carriage, and we were on our way towards the mountains of Switzerland.

The Dreadful Fate.

Travelling companions become more familiar with one another in three days than they would, under other circumstances, in three weeks. This was the case with us. Justine had won our hearts, and on her part, seemed affectionate towards us. It is true she did not lose her silent melancholy, but she became more familiar: sometimes she showed even a degree of cheerfulness. When we had entered our native country, and the Rhine was behind us, she wept silently; I do not know whether from joy or from newly-awakened grief.

In the space of a few days Justine became quite at home in our house. She was the intimate friend of my daughter, who loved her with all her heart, and we treated her like our own child. By constant kindness we succeeded in breaking her silence concerning the secret grief which devoured her.

"Yes, I feel it," said she, one day, when we found her bathed in tears; "I should be ungrateful if I were not quite open towards you. I will relate to you the story of my misfortunes, that you may not suspect me of being tormented with a bad conscience. I am a poor orphan; I hope you will not reject me when I have entrusted you with my secret."

Justine spoke thus, and, after a pause, related to us what follows:—

"My good mother died early; she is now happy. Oh, were I happy like her! But no; God's will is wiser and better than mine! A worthy lady, whom my father had engaged for my education, and for the management of our domestic affairs, took the place of my mother. I was scarcely fifteen years old when my governess was dismissed, and the management of the house given to me. My father often spoke to me, even in those early days, of bad times, and of the necessity of limiting our expenses. Yet our house-keeping expenses were not large, though I observed no limitation in his own. But, if I wished to avoid any outlay which appeared to me superfluous, my father would say, 'You must not begin to spare in the wrong place. We have always lived respectably; it must still be so; otherwise it would injure my credit.'

"My father was a corn and wine merchant. He possessed a beautiful and extensive landed property, not far from our village. But he sold by degrees all his meadows and fields, in order to employ his whole fortune in his business. He was a good-hearted man, and a merry companion. Everybody liked him, except one of our neighbours, a certain Walter, who also dealt in corn and wine, but was of a quarrelsome, jealous disposition, and caused a great deal of trouble to my father, who took it very much to heart. I, too, suffered severely by it, especially as the health of my father was tottering. Alas! in those days I did not know the cause, for at that time he lived moderately. Oh! had I, unfortunate girl, been able to foresee the end of his disease, which began in those very days, or, had I followed the advice of a certain young physician, I should perhaps have saved my father! But I, ignorant thing, did not believe the evil so dangerous as it proved to be; and as to the youth just returned from a German university, I laughed at his advice!"

Here my wife interrupted Justine's narrative, and, full of compassion, asked her, "Why do you grieve, dear child? You could not save your father: his hour was destined by God."

Justine, with a heavy sigh, exclaimed, "All things are destined by God,—but my poor father's end was not a peaceful one." She continued: "In the beginning his ailments appeared insignificant; my father complained only that his stomach was not in order; he ate little; he could not bear every kind of food. In order to excite his appetite, he used to take a glass of wormwood liqueur, or of other spirits, before dinner: he did the same in the morning when he rose. Then he was often tormented by a violent cough, and a kind of choking which caused me great fear. The young physician wished me to withhold the stomachic cordials from my father; but as I saw that they alleviated his suffering, I laughed at his green wisdom, as I called it. Some years afterwards, I thought quite differently about the matter; but it was too late. My father, too, hated the doctors, especially that youth of whom I have spoken, and who was the son——of our neighbour Walter."

Justine spoke these last words with a low, tremulous voice, turning her face away from us towards the window. But I remarked that even her fair neck was suffused with a crimson blush.

After a pause, she continued, "My father likewise took wine between his meals, as many persons are accustomed to do; he was driven to it, because he had many cares, and he wished to be enlivened, though I never knew him really intoxicated. In such moments he merely regained his old good humour and cheerfulness: but I remarked that he became somewhat forgetful, he lost the clear understanding of his business, and often stood before me with a staring, vacant look. His weakness caused me a thousand anxieties. He seemed to suffer in his nerves; his hands trembled; and he complained of sleepless nights, or dreadful dreams, which he vainly sought to drive away by opium. Often too he spoke strange things, even in the day time, more especially towards evening. He sometimes believed that he saw persons in his room, whom nobody else could see; or animals creeping around him, or the ghosts of the dead. His conscience was troubled; he saw the day of judgment in his sleep. I feared for his reason, but I could not induce him to take the advice of a physician. At length I consulted the best doctor in the village; he told me that the health of my father was ruined by the use of strong liquors. He was suffering under *delirium tremens!*

"But the measure of our misery was not yet full. I had still more dreadful things to see and to experience. My poor father had, through his manner of life become careless in the management of his business, forgetful in his payments, had borrowed money, incautiously, to pay other creditors. Enough—a horrible moment came, when ruin overwhelmed us at once. I scarcely dare to relate it.

"One day when I was expecting my father to return from a long journey, the cook entered my room like a person in despair. I had thought her looking ill for some time past, and I had often found her weeping. She told me that she was obliged to leave the house; she begged me to have compassion upon her, and confessed that the moment approached when she should become a mother: she said it was my father who was the cause of her misery and shame. I was enraged, I did not believe her; I called her a wicked, malicious, calumniating creature, and reproached her bitterly. She was silent, wept, and left the house.

"Towards evening my father came home from his journey. I had intended to relate to him what had happened; but he looked stern and angry, ordered me to be silent, and went with a confused countenance into his room. He did not take any supper, and locked himself up in his room, as soon as I had lighted the candles. I expected the worst. After some hours I heard him calling for the cook; I hastened up stairs to tell him that she had left her place. I told him all. He stared at me vacantly, answered nothing, stood up, walked about the room, lighted three or

four other candles, and gave me two rolls of money, saying, 'Take it, Justine, it is the last! It does not belong to me; it is money intrusted to me yesterday: nothing henceforth is ours. I must declare myself bankrupt. My debts are twice the amount of my property. Look in the ledger. Take the money, Justine, and seek to establish yourself in a respectable house. You have learned something, and can support yourself.'

"These words chilled my blood. I thought my father spoke in a state of delirium. I cast a look in the ledger, which lay open on the table; I read a debtor and creditor account, which he had made out, and stood there deeply afflicted. At last I gave him back the rolls of money, and said 'We will rather be honest, dear father, than make use of what belongs to another person.' 'You are right,' cried he, and, closing his eyes, fell back in his arm-chair. After a while, he said, 'God punishes me. Heavy sins weigh upon my heart. Although I shut my eyes, nevertheless devils stand before me. Do you not see them? There they are! they gape after my soul! Oh, I suffer the anguish of death, the horrors of hell. Go, Justine, go: you do not know how many families I have made poor! You will know it one day! They will accuse me—and the cook, too, will not be silent!'

"Thus he spoke for a long time. I begged him to go to bed; but suddenly he became furious, pushed me out of the room, and locked the door after me. When I came down, weeping, the footman was waiting for me. He was as pale as death, and told me, with a trembling voice, that our cook had drowned herself in the river. Fright, confusion, the dishonour to our house, and repentance for my harshness to the poor girl, made me speechless for a while. Then I ran about the room, wringing my hands; I besought the footman to go and assist the persons who were searching for her body. I fell on my knees,—I wished to pray, but could not. I threw myself on a sofa; all my limbs were as if broken. Towards midnight the footman came back, and told me that the darkness made any further search for the body useless. All our servants were gathered round me. The good people, themselves without advice and consolation, compassionately requested me to go to bed. They promised me that they would sit up the whole night. So, at last, I went into my bed-room, not in order to seek slumber, but for the sake of solitude!

"No! I cannot describe to you my state during that horrible night! I prayed; I shed tears of the most poignant grief. Above my bed-room was my father's room. Sometimes I thought I heard his footsteps. At every noise I was frightened trembling and breathless. How could I survive that dreadful night! It appears to me inconceivable even now.

"Already the twilight began to break through my window, when I heard a heavy fall in my father's room above me. I started up with a loud cry from the chair; but the new terror had overpowered me: I sunk back again. The most dreadful ideas passed through my brain. The servants had heard the fall and my cry; they came to me, being afraid that an accident had happened to me. We were for a while undetermined whether we should go upstairs to my father. At last we decided to do so. But the door of his room was locked: he did not answer to our calling and knocking. At my desire the servant forced open the door with an axe. We entered: I flew, full of anxiety, to his bed: he was not in it. Suddenly I heard a piercing cry from one of the servants—I turned round, and—oh! frightful spectacle! there hung a man, with a black, distorted face: at his feet was a table overthrown—it was my unfortunate father!

"I ran away full of horror, hastened down stairs with a broken heart; I did not know in the confusion of my mind what I was doing. In perfect distraction I made a bundle of some of my clothes, and ran away like a mad person. Away from my home, over the fields, I ran, as if in a dream, without knowing whither, without resolution, without design. I recollect only that I spoke with a coachman on the high road, who took me in his coach. My senses left me—perhaps I lay in a fainting fit. I awoke late in the day out of a heavy sleep when the old coachman roused me to dine at some village.

"For all the world I would not have returned to my home. What could I do there? to bear the shame of my family, to be an object of insult, of contempt, or of compassion; to be at least to every body an object of disgust, on account of the fate of the cook, and the dreadful end of my father. Oh, it is a sad thing to stand alone in the world as a bereaved orphan; but to be the surviving daughter of a man who has committed suicide—oh, there is no name for this misfortune!

"The happiness and hope of my life were and are blighted for ever. I had once a friend, a play-fellow in my childhood, the son of our neighbour: he was lost to me for ever. I wrote him a farewell with a broken heart. I now stood alone in the world, and did not know whither to turn myself. The coach had borne me into Germany. I engaged myself as a waiteress in an inn; but was obliged to quit it after six months, because they treated me badly. Through the recommendation of a good-hearted fellow-servant, I obtained the protection of the poor laundress in the small town where you found me.

"Now you know the story of my misfortunes. I have told you all openly. If you were to despise and dismiss me, I would not cease to love you. Oh, my poor unfortunate father! He never thought that his inclination for drinking would occasion such a dreadful end to his life, and make me so wretched. I know well I am born for misfortune; but I am innocent of my hard lot. God gave it me in order that I should bear it: He will not abandon me, a poor orphan, even if all the world should do so."

Here a stream of tears closed her melancholy tale.

LEARNED EYES AND UNDERSTANDINGS.

NOTHING is more remarkable in the practical pursuit of any science than this kind of difference in vision. I have known very observant and quick-sighted men fail to perceive a double star in the heavens; while to others more practised, though using the very same telescope, both objects were distinctly defined. The secret often lies in knowing exactly what to look for, and thence knowing how to adjust not merely the focus of the eye, but what may be termed the focus of the judgment, so as to be able to pitch the understanding into such a key that the information may be understood when it comes. I remember once being present at the Geological Society, when a bottle was produced which was said to contain certain zoophytes. It was handed round, in the first instance, among the initiated on the foremost benches, who commented freely with one another on the forms of the animals in the fluid; but when it came to our hands, we could discover nothing in the bottle but the most limpid fluid, without any trace, so far as our optics could make out, of animals dead or alive, the whole appearing absolutely transparent. The surprise of the ignorant at seeing nothing, was only equal to that of the learned who saw much to admire. Nor was it till we were specifically instructed what it was we were to look for, and the shape, size, and general aspect of the zoophytes pointed out, that our understandings began to co-operate with our eyesight in peopling the fluid which up to that moment had seemed perfectly uninhabited. The wonder then was, how we could possibly have omitted seeing objects now so palpable.—HALL'S *Patchwork*.

A WARNING WELL TAKEN.

WHEN I began business I was a great politician. My master's shop had been a chosen place for political discussion; and there, I suppose, I acquired my fondness for such debates. For the first year, I had too much to do and to think about to indulge my propensity for politics; but, after getting a little a-head in the world, I began to dip into these matters again. Very soon I entered as deeply into newspaper argument as if my livelihood depended on it; my shop was often filled with loungers, who came to canvass public measures; and now and then I went into my neighbours' houses on a similar errand. This encroached on my time, and I found it necessary sometimes to work till midnight, to make up for the hours I lost. One night, after my shutters were closed, and I was busily employed, some little urchin, who was passing the street, put his mouth to the key-hole of the door, and, with a shrill pipe, called out, "Shoemaker, shoemaker, work by night and run about by day!" "And did you," inquired the friend, "pursue the boy with your strap, to chastise him for his insolence?" "No, no," replied Mr. Drew; "had a pistol been fired off at my ear, I could not have been more dismayed or confounded. I dropped my work, saying to myself, 'True, true, but you shall never have that to say of me again!' I have never forgotten it; and while I recollect anything, I never shall."—*Autobiography of Samuel Drew.*

NOCHE SERENA:—THE STARLIGHT NIGHT.

[*From the Spanish of* Fra Luis de Leon.]

When I behold yon sky,
With all the unnumbered lights that gem its steep,
And turn to earth mine eye,
Earth that in silence deep
Lies buried in forgetfulness and sleep—
Within my breast arise
The mingled cares that love and sorrow wake,
The fountains of mine eyes
A sad o'erflowing make,
And thus the silence of the night I break:—

O mansion blest and bright!
Temple of beauty, purer than the snow;
The soul that to thy height
Was born, what fate of woe
Holds prisoned in this dungeon dark and low!

From truth's unerring line
What deadly error so our minds can wrest,
That of thy good divine
Forgetful, still unblest,
We chase a faithless shade that ne'er can be possest!

Man is immersed in sleep,
Nor of his fate the dread importance feels,
While heaven in silence deep
Turns on the eternal wheels,
And all the hours of life unnoticed steals.

Oh! wake, ye mortals wake!
Ere by your fatal negligence betrayed;
Behold your souls at stake:—
Souls, for such glory made,
Ah! can they live on glitter and on shade!

Above, oh! raise your eyes,
To yon eternal, yon celestial spheres,
And soon will you despise
The vanity and tears
Of life, with all its hopes and all its fears.

This earth, so blind and base,
What is it but a point, a point how mean
To yon vast field of space,
Where brighter may be seen
All that will be, and is, and e'er hath been!

The harmony divine
Of yon celestial splendour who can see,
As far above they shine
With motion just, though free,
How still they vary, and yet still agree!

How rolls o'er azure plains
The moon her silver wheel, and with her move
The light whence wisdom rains,
And, others all above,
The brightest star of heaven, the star of love

How the fierce god of war
Rolls red and angry on his separate way,
While Jove's imperial star,
With more benignant sway,
Serenes the heaven with his placid ray!

How on the summit high
Wheels Saturn, father of the age of gold;
With him across the sky
Their track whole myriads hold,
Their glory and their treasure to unfold;

Who, who can lift his eye
To these, and still the sordid earth hold dear?
And not with ardour sigh
To break what holds us here,—
Soul prisoned, banished from that happy sphere?

There dwells contentment sweet,
There reigns ambrosial peace—eternal crowned,
On rich and lofty seat;
There sacred love is found,
With glory and delight encircled round:

There boundless beauty shows
Her perfect pride;—there shines unspotted Light
That still unwearied glows,
That never sinks to night;—
There spring eternal ever meets the sight.

Oh! meads more blest than earth!
Pastures of true refreshment, ne'er to cease!
Oh! mines of richest worth!
Oh! fields of sweet increase!
Oh! dear retiring vales of pure celestial peace!—T. W.

ON MOSAIC WORK.

II.

In almost all specimens of mosaic, the picture or other device is represented by pieces of the substance employed, formed into cubes, parallelopipeds, or other polygonal figures, and retained by one end in a strong cement, to preserve the union of the whole. The ancient mosaics consisted chiefly of marble and coloured glass or pastes, while those of later date have been composed of marble, glass, enamel, agate, cornelian, lapis lazuli, and even jewels. It has been observed by a writer on this subject,—

Mosaic pictures seem to have taken their origin from pavements. The fine effect and use of pavements composed of pieces of marble of different colours, so well joined together as that, when dried, they might be polished, and the whole make a very beautiful and solid body, which, continually trodden upon, and washed with water, was not damaged,—gave a hint to the painter, who soon carried the art to a much greater perfection, so as to represent foliage, masques, and other grotesque pieces, of various colours, on a ground of black or white marble. In fine, observing the good effect which this kind of work had in pavements, and finding that it resisted water, they proceeded to line walls with it, and to take various figures by it, for ornamenting their temples and public buildings. But nature not producing variety of colours enough for them in marble, to paint all kinds of objects, they bethought of counterfeiting them with glass and metal colours, which succeeded so well, that having given all manner of tints to an infinite number of little pieces, the workmen arranged them with so much art that their mosaic seemed almost to vie with painting.

The mode of procedure in the preparation of mosaic pictures is as follows. The enamel employed is a kind of glass, coloured with metallic oxides, and is so fusible that rods of small size may be drawn out by the flame of a candle, without the use of the blow-pipe. Th pieces of enamel are brought to the form of small oblong sticks, something resembling the types put up by the compositor: they are all arranged in drawers, boxes, and cases, regularly labelled, from which they are withdrawn by the artist for his work, when wanted. In composing a large mosaic picture, the foundation or back is made of a stone called *piperno*: several oblong pieces, together equal to the whole surface, are taken, each several inches thick, whereby great strength and solidity are acquired; and these united pieces are hollowed to the depth of about three inches and a half, leaving a border all round, which will ultimately be on a level with the surface of the picture. The excavated surface is intersected by transverse grooves, about an inch and a half deep, and somewhat wider at the bottom than the top, in order to retain a quantity of cement or mastic which fills them, the line of the grooves joining in an inclined direction from each side, so as to form an angle in the middle. The separate pieces are then nicely adjusted together, by strong iron clamps behind. If the dimensions of the picture be not so large as to require a foundation built up in this way, a large marble slab is hollowed to the depth of three inches and a half, leaving a projecting border.

The foundation being thus prepared, the excavated bed is gradually filled with a strong and durable kind of cement or mastic, made expressly for this purpose. As the frame is filled, the picture is delineated on the cement, in the same way as painting in fresco; and the fragments of enamel being selected for a small portion of it at a time, they are successively beaten into the cement with a small flat wooden mallet, until the tops of the whole are nearly on a level. When the artist observes that the fragments so arranged are not suitable to his taste and expectations, he removes them, and substitutes others, which is easily done before the cement hardens; but after the hardening, this becomes a more difficult operation. Proper cement remains in a state to receive fragments during fifteen or twenty days, by observing the

necessary precautions. After the whole picture is composed, its surface is ground down to a perfect plane in a manner similar to that which is practised in grinding mirrors, and a polish is given to it with putty and oil. During the progress of these operations any crevices displayed at the joints are filled with pounded marble or enamel mixed with wax, which penetrates by passing a hot iron over it. Large compositions made in this way are, as was before observed, very tedious, requiring several years to execute, and the grinding and polishing of the surface of a picture are extremely laborious.

There is a kind of mosaic in which metals are combined with glass in ornamental devices. The method is not so much practised now as formerly, but the mode of procedure is as follows. Crucibles full of melted glass are prepared in the usual manner, and metallic oxides are added to them, so as to produce in each crucible a glass of the requisite tint. When the oxides are thoroughly united with the glass, the melted mixture is ladled out hot, and poured on a smooth slab of marble, where it is flattened with another piece of marble, and cut into strips about an inch and a half in width. These strips are then, with an instrument which the Italians call *bocca dicane*, cut into smaller pieces, of different sizes and shapes, which are then deposited in separate cases. If it be desired to have gold, either in the ground of the painting, or in the ornaments or draperies, the artist takes some of the pieces of glass, formed and cut in the manner just mentioned, and after having moistened them on one side with gum-water, lays pieces of gold leaf on the moistened parts. These gilt pieces are then placed on a fire-shovel, covered with an inverted glass vessel, and placed within a furnace or oven, where they continue until they have acquired such a degree of softness that the gold becomes firmly bound to the glass. Supposing the glass pieces to be thus prepared, and that the mosaic picture is to be formed on a wall, the wall is covered with a plaster made of ground stone, mixed with brick-dust, gum tragacanth, and white of egg. On the surface of this plaster, while still soft, the artist sketches his design, and then proceeds to work in his mosaic. He takes up the little pieces of glass by means of pliers, and sticks them one by one in the plaster, arranging them according to the lights, shadows, and tints required for the picture, and pressing or flattening them down with a ruler, which serves both to imbed them in the plaster, and to bring them to a level surface. The subsequent polishing is effected in a similar manner to that of the pictures before alluded to.

The tesselated pavements, of which so many specimens are seen, both ancient and modern, are made in different ways. In some cases, the pieces of marble, chosen of such colours as may be required, are cut by the saw into the forms necessary to complete the design, and these pieces are then joined edge to edge, and secured with some durable kind of cement. In other instances, the ground-work consists of one solid block of marble, either white or black. The design having been drawn on the surface of this block, the mason chisels out those parts which are to be of a different colour, making the cavities an inch or an inch and a half in depth, and as accurately formed as possible. Small pieces of marble are then contoured, or fashioned to the design, and their thickness having been reduced to the depth of the cavities, they are inserted in their proper places, and secured with a mastic of lime and marble-dust. In other instances, after the design has been drawn on a block of marble, and chiselled out to the proper depth, the cavities are filled with a peculiar cement, composed of Burgundy pitch and other ingredients, and poured in while hot. The overflowing edges are then ground down and polished, and the resulting effect is often very beautiful.

A kind of mosaic of gypsum has been frequently produced, formed of a coarse talc, or shining transparent stone, found in the quarries of Montmartre, near Paris, among the stones from whence plaster of Paris is made. Sometimes the ground of these mosaics is made of freestone, and sometimes of plaster of Paris: if the former the device is chiselled out, as before described, but if the latter the following plan is observed. A wooden frame-work is formed, of the length and breadth of the intended mosaic, and about an inch and a half thick, and so contrived that, the tenons being only joined to the mortices by single pins, they may be taken asunder, and the frame be dismounted when the plaster is dry. The frame is covered on one side with a strong linen cloth, nailed round the edge, and being placed horizontally, with the linen at bottom, it is filled with wet plaster of Paris. When the plaster is half dry the frame is set up perpendicularly, and left in that position till quite dry, after which the frame is dismounted, and the plaster ground taken out. The ground being thus prepared, it is covered with a layer, five or six inches thick, of prepared gypsum. The stone before alluded to is calcined in a kiln, beaten in a mortar, and passed through a sieve into a copper, where it is dissolved and boiled in the best English glue. Some colouring substance is then added, to give the mixture whatever tint may be desired, and the whole is worked up into a mortar or plaster. When the thick layer of this plaster, which has been laid on the ground of plaster of Paris, is hardened, the design is drawn upon its surface, and cavities chiselled out as if it were stone, which it nearly equals in hardness. The cavities, thus made, are filled up with the same gypsum, boiled in glue, but differently coloured. The artist has a number of little cups or pots at hand, in which he mixes the gypsum with the respective colours which he may require. When the whole design has been filled up in this manner, and thoroughly hardened, it is slightly polished with brick-dust or soft stone, to show the effect more clearly. The artist then goes over the work in every part, cutting such places as are to be either weaker or more strongly shadowed, and filling them up with gypsum of the required tint. This retouching is repeated until the colours approach as near as practicable to those of the object imitated. The work being finished, it is scoured with soft stone, sand, and water, then with pumice-stone, and lastly, polished with a wooden rubber and fine emery. A final lustre is given to it by smearing it over with oil, and rubbing it a long time with the palm of the hand, by which a gloss is produced in no way inferior to that of marble.

NATIVES of New Guinea worthy of belief have assured me, that if a Papua of the coast is struck by a desire to obtain any articles brought by the foreign trader, for which he has no productions to give in exchange, he will not hesitate to barter one or two of his children for them; and if his own are not at hand, he will ask the loan of those of his neighbour, promising to give his own in exchange when they come to hand, this request being rarely refused. This appeared to me to be almost incredible; but the most trustworthy natives bore unanimous evidence to its truth. I have known parents sell their children, when their maintenance became too heavy a burden for them to bear, without heeding whether they would ever see them again.—KOLFF'S *Voyage of the Dourga.*

I AM not acquainted with any country in which there is so little true independence of mind, and so little freedom of discussion, as in America. The authority of a king is purely physical; it controls the action of the subject without subduing his private will; but a majority in America is invested with a power which is physical and moral at the same time; it acts upon the will, as well as upon the actions of men, and represses not only all contest, but all controversy.—DE TOCQUEVILLE.

LONDON:
JOHN WILLIAM PARKER, WEST STRAND.
PUBLISHED IN WEEKLY NUMBERS, PRICE ONE PENNY, AND IN MONTHLY PARTS, PRICE SIXPENCE.
Sold by all Booksellers and Newsvenders in the Kingdom.

THE

Saturday Magazine.

Nº 619. FEBRUARY 26TH, 1842. {PRICE ONE PENNY.

THE HANSE TOWNS OF GERMANY. II.

ENTRANCE TO LUBECK BY THE HOLSTEIN GATE.

LUBECK.

THE city of Lübeck, when viewed with reference to historical events, may be considered as one of the most interesting in Germany, yet at the present time there is not much that is attractive in its appearance or prospects to recommend it to the notice of the traveller. The situation is flat, and opposed to pictorial effect, though, certainly, much has been done to make the environs of the city pleasing and delightful, and there is also the charm of cleanliness both in the streets and suburbs, to compensate for many other defects. The immediate neighbourhood of Lübeck consists of a rich and well cultivated country, through which the rivers Trave and Wakenitz take their course: it abounds in shady avenues, fine gardens, and luxuriant fields, with here and there a busy thriving village to diversify the scene. Where a general view of the city can be obtained, (which is best accomplished near the Holstein gate,) the spires and ancient buildings rising in the midst of such a well cultivated country have a very pleasing effect, but still, as we have said, there is too much uniformity of surface to constitute a picturesque effect. At a short distance from Lübeck is the little town of *Travemunde*, where there is an excellent establishment for sea-bathing, and where numerous patients annually resort for the recovery of their health. It is situated at the mouth of the Trave, (as its name imports,) and has a population of 1000. This is properly the harbour of Lübeck, provided with a lofty light-house, and everything necessary for the safety of vessels.

The historical associations connected with the name of Lübeck are many and important. Founded as early as the year 1140–42 by Adolphus II. of Holstein, and ceded by him to Henry the Lion, it passed through all those changes of fortune which make the early history of towns so similar to each other, and (except to the historian and antiquarian,) so uninteresting. We shall not name the several powers that from time to time bore sway in Lübeck, but content ourselves with saying that the independence of the city was finally established by a victory over the Danes in 1227, from which time it continued to increase in power and importance, forming offensive and defensive alliances with Hamburgh and other cities, until at length in 1260 it became the head of the powerful Hanseatic league. It now convoked all the assemblies of that confederacy, which were held chiefly within its own walls; it preserved the archives and treasures of the league, and the Hanseatic fleets were always commanded by its burgomasters. At the time of its greatest prosperity, it is said to have had 50,000 citizens able to bear arms; it always came off victorious in foreign wars, and was for a long period free from internal discord. The first symptoms of domestic trouble became apparent in the year 1384, when a dangerous insurrection broke out within the walls of the city. Some discontented citizens conspired with Holstein nobles, and framed a plan for the murder of all the members of the senate, and the plunder of their dwellings, together with those of the richest and most distinguished citizens. This plot was frustrated, as many similar ones have been, by the pangs of conscience; that monitor which God has mercifully implanted in the human breast, as a check upon the evil propensities of our nature. One of the Holstein noblemen sorely repented having lent himself to the atrocious design, and

resolved at all hazards to relieve his conscience from the weight of guilt. Yet how could he evade the obligations of that solemn oath, by which he had bound himself not to reveal the plot to *any living soul?* The way in which he endeavoured to satisfy himself in this respect is curious. Hastening to the house of one of the citizens, named John Perseveln, and not finding him at home, he asked Perseveln's son to give him a glass of beer. His request being complied with, he addressed the glass in the following terms:—"To thee, glass, I say it, and to no living soul: unless the danger which threatens this good city be promptly and prudently averted, Lübeck will be, before noon, to morrow, in the hands of its enemies, and the blood of its senators and honest citizens will flow through the streets." Having said this, he instantly mounted his horse, and galloped away with all speed. The young man immediately reported these strange words in the senate-house. The gates of the city were closed, the conspirators were discovered and apprehended, and the danger happily averted.

With the decline of the Hanseatic league, the power and consequence of Lübeck also declined, though amidst the changes affecting the various parts composing this body, the head was always respected. In the sixteenth century the bright light of the doctrines of Lutheranism shone on this important city, and was gladly hailed by her citizens. The senate at first jealously opposed the principles of the Reformation, but was soon compelled to open the churches to teachers of the purer faith. What was done at first hesitatingly and unwillingly, became subsequently a matter of serious and well maintained duty, so that we find the most threatening remonstrances of Roman Catholic princes unavailing to change their purpose, or to shake their growing convictions. The monasteries were dissolved, the Romish adherents left the city, and we read of a courageous member of the senate directing the new institutions with zeal and energy, though at length he ended his life upon the scaffold, far from his home.

The desolations of the thirty years' war, so widely felt throughout Germany, did not affect Lübeck so severely as many other countries; still we may date its gradual decline from that period. A heavy load of debt was incurred, which undermined the prosperity of the city; maritime commerce was greatly affected; the Hanseatic league was dissolved; trade was gradually turned into other channels, and Lübeck ceased to be a commercial city of the first rank, though still a place of importance. But Lübeck was soon visited with all the horrors of war, and in 1806 was the scene of a sanguinary conflict between General Blucher and his corps, and the French army under Bernadotte, Soult, and Murat. After an heroic resistance Blucher was obliged to retreat, and the citizens of Lübeck were left to all the miseries of pillage, and were compelled to receive and maintain the whole hostile army of 75,000 men. Enormous contributions now exhausted its treasury, its commerce was annihilated, and in 1810 it was incorporated with the French empire, and its constitution abolished by an act of violence.

The fall of Napoleon at last restored Lübeck to its rights, and it now holds the rank of one of the four free cities of Germany, though it has ceased to be a fortress. It has its ancient democratic constitution: the executive and administrative authority is vested in the senate, consisting of four burgomasters and sixteen senators. The assembly of citizens, divided into twelve colleges, forms the legislative power.

Among the public buildings of Lübeck, the most remarkable is the church of St. Mary (*Marienkirche.*) which is considered to be the finest church in the whole of northern Germany. Like many important edifices in our own country, it is most disadvantageously situated, being in the centre of the city, and completely surrounded by houses, so that a general view of the architectural effect of the building is unattainable. This church was built at different periods: it was consecrated in 1163, but the two western towers were not erected till 1310, and the turret in the centre of the roof containing the clock and chimes, is a work of more recent date. The interior has a very rich and pleasing effect. It consists of three aisles, the centre one extremely lofty, with pillars richly adorned with foliage. The works of art in this cathedral are numerous; the most distinguished is the altar, the magnificent present of one of the senators, and executed by the celebrated artist, Thomas Quellinus of Antwerp. It is entirely of marble, of considerable height, and adorned with fine marble statues, and bas-reliefs. There are several other monuments by the same master, and by other eminent sculptors, particularly of Omacht, lately deceased. Other things worthy of notice are, two ancient altar-pieces carved in wood; a tabernacle cast in bronze by Rughesen and Gruden in 1479, and a font cast by Hans Anengeter in 1337. Another celebrated work of art is a large clock, which occupies the whole wall behind the altar. The lower division contains a moveable plate, with all the particulars of the calendar from the year 1753 to 1875, and the daily places of the sun, moon, and planets known at the time of its construction. The upper division is intended for the especial amusement of the people. With the last stroke of twelve at noon, a door on the right opens, from which issue the emperor and seven electors, accompanied by an apparitor, who pass before a figure of the Saviour in regular order. The figure gives them a benediction with the motion of its hands, for which they return thanks, bowing their heads and retiring through a door on the left hand. At this door two other apparitors appear, making likewise a profound obeisance, and at the same moment some angels from above sound their trumpets.

The paintings of this church demand a brief notice. The subject of the altar-piece is the Adoration of the Infant Christ, ascribed by some to Albert Durer, by others to Holbein. It is executed with extraordinary delicacy, and attracts the attention of the visitor by its great beauty and excellence. There is likewise a fine picture by Albrecht Altdorfer, representing the Adoration of the Holy Trinity. A picture of the Crucifixion, by an unknown hand, is chiefly valued on account of its great antiquity. Two admirable Italian paintings adorn the vestry; these are ascribed to Perugino. Many fine paintings adorn the choir, chiefly of the Durer school; and in different parts of the church there are quaint subjects of an allegorical description. A remarkable production of this kind, though inferior to a similar representation at Basle, is the well known Dance of Death, consisting of a number of paintings on panel, in which Death invites men of all ranks and ages, from the pope to the infant in the cradle, to dance; and at length, forms with them a long chain,—the ancient city and environs of Lübeck appearing in the background. Some ancient rhymes in Low German, were once attached to these pictures, which were unfortunately expunged in the eighteenth century, and their place supplied by others more enlightened from the pen of Nathaniel Schlott. Among the ancient ones was this artless couplet, put in the mouth of an infant—

> O Death! what means this strange command?
> Thoud'st have me dance—I cannot stand.

There are many traditions connected with this church; one of them relates to its origin, and runs thus:—Charlemagne had taken a stag in the chase, in a forest which stood on the site of the church, but he spared its life, and adorned it with a rich collar, on which he caused the date of the year to be engraved. Four hundred years after, says the fable, Henry the Lion killed at the same spot, this same stag, between whose antlers a double cross had since grown from its forehead. He

took the collar, which was of immense value, and employed it towards the building of a church, and gave the bishopric the double cross for its arms.

Lübeck has several other churches and chapels, which do not call for particular attention. It has also a foundry, an arsenal, and many excellent charitable institutions. One of these is for the maintenance of the unmarried daughters of respectable families during their lives. This charity is richly endowed, having among its estates no less than twenty-four villages. Another is for the support of one hundred and fifty aged citizens and wives of citizens. This was founded by a worthy merchant, who, by his industry and probity, raised himself from the condition of a poor foundling to the office of a senator. There are also institutions for the reception of orphans, for the daily distribution of food to the poor, for the reception of destitute females, and for insane persons.

The citizens of Lübeck have a high character for uprightness and honesty, combined with benevolence and kindness. The title of a citizen of Lübeck is, therefore, an honourable and a respected one; and as each succeeding generation is taught to feel the value of this character, mutual confidence ensues, and forms the surest bond of union amongst them. The same confiding disposition is also cultivated in domestic life, and promotes the harmony of all classes. Would that this feeling were more common amongst ourselves; that extortion and unfair dealing in trade were so rare that we might have no just cause for suspicion in our dealings with our fellow-men, and that sincerity and confidence in private life were as much aimed at as now we find the mere exterior polish sedulously cultivated!

The public schools of Lübeck are excellent, and have produced some eminent men. The gymnasium was considered by Cuvier as worthy of the highest encomiums. Other public institutions for educational purposes have been praised for their judicious arrangement and management. The city library was formed out of the ancient libraries of dissolved monasteries, and has since been increased by considerable donations. It now contains between forty and forty-five thousand volumes, and is rich in ancient divinity and old impressions, besides valuable manuscripts.

There are no public collections of art in Lübeck; but many scattered articles of value in the private collections, especially a very rare collection of carvings in wood, the work of an unknown artist, some time between the years 1573 and 1583. These carvings form a singular monument of German genius, and exhibit talent and industry of no ordinary kind.

This venerable Hanseatic city has produced many remarkable men, a few names will be added by way of conclusion to this brief sketch. Franke; Mosheim; Ligstorf; Barmeister; Meibom; Jung; Koppen; Von Rumorh; Schmidt; Adrian and Isaac von Ostade; Sir Godfrey Kneller; Frederick Overbeck.

THERE is less private and social freedom in America than there is in Europe. I allow that the multiplicity of sects in the United States is some bond for their mutual forbearance and freedom, but the strength and repose of a great establishment are in some respects more favourable to private liberty. It is in the protected soil of great establishments, that the germs of every great reform in the Church have quietly taken root. For myself, if I were ever to permit my liberty to be compromised for such considerations, I would rather take my chance in the bosom of a great national religion, than amidst the jealous eyes of small and contending sects. And I think it will be found that a more liberal and catholic theology has always pervaded establishments than the bodies of dissenters from them. Nay, I much doubt whether intolerance itself, in such countries—in England and Germany for instance,—has ever gone to the length of Jewish and Samaritan exclusion that has been sometimes witnessed amongst us.—DEWEY'S *Moral Views.*

SIR MATTHEW HALE.

II.

IN the year 1654 Hale was elected one of the five knights of the shire returned to parliament for the county of Gloucester. He does not appear to have entertained any scruples at the lawfulness of appearing in that assembly; his chief motive seems to have been to curb in some degree the designs of many of the more violent members. "He would engage for neither side," says Burnet; "so he with a great many more worthy men came to parliament more out of a design to hinder mischief than to do much good." One among many of the extravagant motions in the House was to destroy all the records in the Tower, and to settle the nation on a new foundation. The opposition of Hale (whose great knowledge on the subject was known and respected,) succeeded; he spoke with such zeal that "he stopped even the mouths of the frantic people themselves."

After the death of Oliver Cromwell, Hale refused to act under a commission for the Protector Richard, stating that he could no longer sit under such authority. In the same year he was returned as one of the members for the University of Oxford; and in 1660 appeared as knight of the shire for the county of Gloucester, in the parliament which recalled Charles II.

At the Restoration, when it became necessary to remodel the bench, Clarendon resolved to fill the vacant seats with men of probity and learning. But Hale was very averse again to undertake the arduous duties of a judicial station, urging, among other reasons, the following:—"Because the smallness of my estate, the greatness of my charge, and some debts, make me unable to bear it with that decency which becomes it, unless I should ruin myself and family; my estate not above 500*l.* per annum; six children unprovided for; and a debt of 1000*l.* lying upon me." He was, however, prevailed on to accept an office which he filled so honourably to himself, and so beneficially to the justice of his country; he was appointed Chief Baron of the Exchequer; and on delivering him his commission, the Chancellor, Lord Clarendon, warmly expressed the high esteem he entertained for his character, saying, "that if the King could have found an honester and fitter man for that employment, he would not have advanced him to it, but that he had preferred him, because he knew no other who deserved it so well" The modesty of the Chief Baron induced him to decline the customary honour of knighthood; but by an innocent little stratagem, it was so arranged that he should meet the King at the house of the Chancellor, where being taken by surprise, Hale submitted to the ceremony.

That Hale did not accept the high office to which he was now called merely to add to his worldly wealth and dignity is perfectly clear from the resolutions which he made about this time, a copy of which we insert below*.

* Things necessary to be continually had in remembrance:

1. That in the administration of justice I am intrusted for God, the king, and country; and therefore,

2. That it be done, 1. uprightly; 2 deliberately; 3. resolutely.

3. That I rest not upon my own understanding or strength, but implore and rest upon the direction and strength of God.

4. That in the execution of justice I carefully lay aside my own passions, and not give way to them however provoked.

5. That I be wholly intent upon the business I am about, remitting all other cares and thoughts as unseasonable and interruptions.

6. That I suffer not myself to be prepossessed with any judgment at all, till the whole business and both parties be heard.

7. That I never engage myself in the beginning of any cause, but reserve myself unprejudiced till the whole be heard.

8. That in business capital, though my nature prompt me to pity, yet to consider there is a pity also due to the country.

9. That I be not too rigid in matters purely conscientious, where all the harm is diversity of judgment.

10. That I be not biassed with compassion to the poor, or favour to the rich, in point of justice.

11. That popular or court applause or distaste have no influence in any thing I do in point of distribution of justice.

12. Not to be solicitous what men will say or think, so long as I keep myself exactly according to the rule of justice.

13. If in criminals it be a measuring cast, to incline to mercy and acquittal.

His character as a judge was "splendidly pre-eminent; his learning was profound; his patience unconquerable; his integrity stainless." In the words of one who wrote with no friendly feeling towards him, "his voice was oracular, and his person little less than adored."

Many anecdotes are preserved illustrative of the constancy and integrity of his character, his abhorrence of everything like improper influence, and his constant attention to the "things necessary to be continually had in remembrance." On one occasion a nobleman went to his chambers and told him that having a suit in law to be tried before him he came to inform him of some particulars concerning it, in order that he, the judge, might the better understand it when it came to be heard in court. The judge immediately interrupted him, saying that, "he did not deal fairly, to come to his chambers about such affairs, for he never received any information of causes but in open court, where both parties would be heard alike." The judge would not listen to any remonstrances, but dismissed the offended nobleman, who went directly to the King, and complained of the chief baron's behaviour as a rudeness not to be endured. But his majesty bade him content himself that he was no worse handled, and said he verily believed he would have used himself no better, if he had gone to solicit him in any of his own causes. On another occasion, a gentleman who happened to be a party in a cause which stood for trial at the assizes sent a buck to the judge as a present. On the trial coming on, Hale remembered the name, and desired to know if he was the same person who sent him the venison? On being informed that such was the case, he told the donor that he could not suffer the trial to go on until he had paid him for his buck. The gentleman replied, that he never sold his venison, and that he had done nothing to him which he did not do to every judge that had gone that circuit, as several gentlemen present well knew. But the judge calling to mind the words of Solomon, that *a gift perverteth the ways of judgment*, would not suffer the trial to proceed until the venison was paid for, which the gentleman resenting as an insult, withdrew the record. In the same spirit of scrupulous justice, Hale directed his servants to pay for the six sugar-loaves which, according to custom, were presented to him at Salisbury by the dean and chapter. So also in the common transactions of life the same spirit was displayed: in his purchases he insisted upon paying more than was demanded, alleging that it became judges to pay more for what they bought than the true value, that so those with whom they dealt might not think they had any right to their favour by having sold such things to them at an easy rate: that it was suitable to the reputation which such functionaries ought to preserve, to make such bargains that the world might see they were not too well used on some secret account.

In his behaviour on the bench he was serious, patient and kind. He was never hasty and captious towards counsel, but when he found them wandering from the point, he led them back to it, and thus prevented many perplexities from appearing in the cases which were argued before him. In summing up to the jury at trials, he would require the bar to interrupt him if they saw any mistake or omission in his statement; "an interruption," says Mr. Roscoe, "which many judges of meaner abilities have regarded as an insult." To the younger members of the law, Hale was singularly kind, frequently encouraging them and taking every opportunity to afford them instruction. The Hon. Roger North says.

I have known the Court of King's Bench sitting every day, from eight to twelve, and the Lord Chief Justice Hale managing matters of law to all imaginable advantage to the students, and in that he took a pleasure, or rather pride. He encouraged arguing when it was to the purpose, and used to debate with the counsel, so as the court might have been taken for an academy of sciences as well as the seat of justice.

On the trial of criminals, (says Mr. Roscoe,) Hale displayed that temper and moderation so requisite to the ends of justice, when the accused and the accusers meet on unequal terms. He indulged in no levity, he exhibited no harshness or severity, but summed up with an impartiality which left even the prisoners nothing of which to complain. He would never suffer the witnesses to be intimidated or confused by the examination of counsel. When it became necessary for him to pronounce sentence of death, the solemn and earnest exhortations with which he accompanied it, so free from all affectation, so serious and so devout, are said to have attracted strangers to listen to the impressive lesson.

"As a lawyer, and especially as a constitutional lawyer, Hale has perhaps, (says Mr. Roscoe,) never been equalled." As a man and a Christian he is entitled to our highest consideration. His life was spent in doing good: his feasts were given to the poor, and he himself would sit down and eat with them. He laid aside the tenth penny of all he got for the poor, and after he was a judge many of the perquisites of his office were sent to the gaols to discharge poor prisoners, who never knew from whose hands the relief came. His pity extended even to his beasts. When his horses became infirm, they were turned loose upon his grounds and used only for very easy work. His dogs were treated with similar care. Being told that a shepherd was about to get rid of a dog that had become blind, he sent for the animal and while life lasted had it fed. Never was his anger known to be so great, as towards one of his servants who had negligently starved a bird to death.

How exemplary and instructive was his observation of the Lord's Day! (says Dr. Williams.) Instead of counting the Sabbath a "weariness," or employing it as many do, in idle frivolous occupations, he attended, with pious constancy, upon public worship. There, in the exquisite language of the Litany, he "meekly" heard the word of God; "he received it with pure affection, and brought forth the fruits of the spirit." Afterwards he watched the good seed, by repeating before his family, often with judicious additions, an outline of the truths taught in the pulpit; and then between the evening service and supper time, secluding himself entirely from others, he indulged in meditation, employing his pen merely to aid the fixing of his thoughts, and to preserve them the better for future reference, and domestic instruction.

It was during these hours of seclusion, that he wrote the two volumes of *Meditations*, which were published shortly before his death: and on such occasions he planned the scheme for a larger work, the composition of which occupied him during the leisure hours of seven years:—but these hours were few, and occurred for the most part during his circuits. The object of the work is to attack Atheism, and is divided into four parts, viz., 1. Of the origination of mankind, the creation of the world, and the truth of Mosaic history. 2. Of the nature of the soul and of a future state. 3. Of the attributes of God, both from the abstract ideas of Him and the light of nature. The evidence of Providence. Notions of morality and the voice of conscience. 4. Of the truth and authority of Scripture, with answers to objections.

When the work was finished he sent it by an unknown hand to Bishop Wilkins to desire his judgment of it. The bearer would give no other account of the author than that he was not a clergyman. The bishop and his friend Dr. Tillotson, read much of the work with pleasure, but could not imagine who could be the author, and

14. In criminals that consist merely in words, where no more harm ensues, moderation is no injustice.

15. In criminals of blood, if the fact be evident, severity is justice.

16. To abhor all private solicitations, of what kind soever, and by whomsoever, in matters depending.

17 To charge my servants, 1. Not to interpose in any matter whatsoever, 2. Not to take more than their known fees; 3. Not to give any undue precedence to causes; 4. Not to recommend counsel.

18. To be short and sparing at meals, that I may be the fitter for business.

how a man of such exalted powers could be unknown to them. After some time, the bishop, suspecting Lord Hale to be the author, went to him and at once thanked him for the entertainment his work had afforded. The judge blushed deeply, and, supposing himself to have been betrayed by his messenger, began to express his displeasure. But the bishop stated that the great and varied learning of the book itself led him to suspect the author, for he knew of no other man capable of producing such a work. The excellent prelate then went on to state, that the arguments and method of the work could not be surpassed, but that its great bulk was an objection: if, however, the author could not command leisure sufficient to a careful reduction, it ought to be published as it was, rather than the world should be deprived of so great a treasure. But time for revisal was not found, and the first part only was sent to the press under title of *The Primitive Origination of Mankind, considered and examined according to the light of Nature.* The author did not live to see the work published, and the remaining volumes are still in M.S. Bishop Burnet has given a masterly analysis of the first volume, which he considers to be "one of the perfectest pieces, both of learning and reasoning that has been writ on the subject." It does not fall within our province to speak of his legal works. It will be sufficient to give the general testimony of a competent authority, Mr. Roscoe, that "they are worthy of the high reputation which he enjoyed while living, and will for ever remain as monuments of his diligence and profound learning."

In the year 1671, Hale was raised to the chief justiceship of the King's Bench: his reputation as a judge was so great, that he attracted after him much of the business which had been depending in the Exchequer. He did not long preside in this court. His health began to fail, and though he endeavoured to perform his duties, being supported to the bench by his servants, yet his strength was unequal to them. He earnestly applied for his *writ of ease*, but so highly was he esteemed in public life, that the King delayed to accede to his request. At length, on the 21st of February, 1675, he prepared a short deed of surrender, having on the previous day surrendered to the King in person, who treated him with great kindness. But Hale was not permitted to enjoy his well-earned retirement; he suffered from attacks of asthma and from dropsy, under which he sank and died on Christmas day, 1676. He was buried in Alderley churchyard, according to his own request, for he did not much approve of burying in churches, and used to say, that the churches were for the living, and the churchyards for the dead.

Sir Matthew Hale was twice married; first to the daughter of Sir Henry Moore, of Faly, in Berkshire; and secondly to the daughter of Mr. John Bishop, of Faly. He had ten children, but his sons do not seem to have inherited their father's virtue and learning.

In concluding this notice of a good and eminent man, we need scarcely apologise for having omitted many things which have been recorded to his discredit. His modest and retiring disposition led him to shun society, and thus he has been most unjustly accused of admitting none but flatterers to his presence. A sufficient answer to this accusation is the simple fact that he enjoyed the love and esteem of such men as Selden, Vaughan, Ward, Barrow, Tillotson, Wilkins, Stillingfleet, and Baxter. The statements of a contemporary biographer must be received with caution, especially those of North, whose pen was guided by some feelings of malevolence. The only authentic stigma which attaches to the name of Sir Matthew Hale, is to be found in the fact of his having condemned two women for witchcraft, at the assizes at Bury St. Edmunds, in the year 1665; but here we must moderate our censure, by calling to mind the prejudices of the times in which he lived.

THE ROBIN REDBREAST.

II.

NEST OF THE REDBREAST

High is his perch, but humble is his home.
And well concealed. Sometimes within the sound
Of heartsome mill-clack, where the spacious door
White-dusted, tells him plenty reigns around,—
Close at the root of brier bush, that o'erhangs
The narrow stream, with shealings bedded white
He fixes his abode, and lives at will.
Oft near some single cottage he prefers
To rear his little home; there, pert and spruce,
He shares the refuse of the good wife's churn.
Not seldom does he neighbour the low roof
Where tiny elves are taught.—GRAHAME.

THE *familiarity* of the redbreast has already engaged our attention: we desire therefore to present to notice some other prominent features in the character of this bird, *i. e.*, its courage, activity, and usefulness. By the courage of the redbreast we mean that bold defence of its own rights and privileges, and that fearless attack of larger and more powerful birds, as well as of its own species, which have led a modern writer to say, "when we look to its pugnacious and relentless habits, its revengeful and vindictive propensities, one would almost feel inclined to close one's door against it in the time of need." Before we join in this harsh judgment of the temper of our little friend, it is worth while to consider the solitary habits of the family to which it belongs, and the jealousy of aggression to which such habits lead. While other small birds frequently appear in flocks, and are not only social in their own species, but mingle freely with others without the slightest appearance of hostility, the genus *Sylvia* is distinguished by habits entirely the reverse of these, so that even in the pairing time it is rare to see two of its members in company. The robin is by nature therefore a secluded and solitary bird; and there is no appearance of concerted movements or recognition of another bird of its kind. Shy with its fellows as it is familiar with man, yet it is by no means timid or retiring. On the contrary, its habi of self-dependence seems to be the spring whence proceeds its spirited maintenance of its own rights, and its vigorous attacks on those who are presumptuous enough to invade them. The robin is sometimes seen severely to chastise its own progeny, probably with a view to make them disperse in quest of their own livelihood; and these, as soon, as they are old enough to leave the nest, show no symptoms of family affection, but seek their own individual interests, even should it be at the expense of an obstinate battle with some near relation. The same self-dependent spirit is manifested when other birds offer to interfere with the robin in anything which he

considers a peculiar privilege of his own. Has he a particular beat, where he meets with the "refuse of the good wife's churn," or any similar dainty? how valiantly does he alight in the midst of a whole troop of invading sparrows and put them to instant flight. Does he meet with molestation in the retired nook which he has selected for a nesting-place? how dearly does the rash intruder pay for his temerity, and how fierce is the conflict occasioned by such a procedure. Mr. Wood tells us, in his *British Song Birds*, that once he found two robins in such desperate conflict, under a laurel bush, that neither of them observed his approach, or at all events they heeded it not, so that both fell into the hands of "the prying naturalist." On putting them into a cage, capacious enough to have held a dozen birds of a more peaceable nature, he was surprised to find them renewing the combat more fiercely than ever. He now released one of his prisoners, and each of them instantly poured forth its song in defiance of the other, the one within the wires, the other at full liberty. The next day he set the other captive at liberty, and on the evening of the same day he found the champions again at their post, fighting each other "tooth and nail."

The courage of the redbreast is also apparent at the time of building the nest. It generally chooses a secluded spot for this purpose, such as a hollow tree in some lonely copse or lane, or a cavity in the bank at its root. The nest is well concealed, and often evades the closest search, even when the flight of the bird has attracted attention to the place. But the behaviour of the old birds at this time, is not indicative of timidity. They are generally flitting about near the nest, and though they are careful enough to be out of the way of danger, they never become agitated, or fly off to any great distance, but merely get the screen of a tree or hedge between themselves and that by which they happen to be disturbed. The red-breast is a very early builder, and sometimes seeks concealment for its nest in cavities among grass, before the foliage is thick enough to afford shelter among trees. Mr. Rennie mentions a remarkable instance of early building. A pair of redbreasts began to build at Christmas, and seeming to be aware that the woods were not likely to afford them shelter or subsistence, they selected a hole in the corner of the ceiling of a greenhouse as a suitable place. This occurred on the property of the late Lord Monboddo, in Kincardineshire, and care being taken to feed the birds as well as to give them no molestation, they succeeded in rearing a brood of young, even at that inauspicious season of the year. The robin's nest is formed of moss and grass, with a lining of hair and feathers. The older naturalists declare that where the natural cover for the nest is not sufficient, an artificial concealment of withered leaves is adopted, which idea doubtless suggested the notion of the robin strewing leaves over "the babes in the wood." But there seems to be no foundation for the supposition, no such method of concealment being detected by modern observers. The eggs of the robin are from four to seven in number, of a dull whitish colour, with waved lines and spots of ash and rust colours. During incubation the male sings, but not so as to be heard at any great distance from the nest, so that his sweet but subdued notes are overpowered by those of the other musicians of the grove, who are at that time pealing in full orchestra.

Another peculiarity of the redbreast is its activity. This is denoted by the whole deportment of the bird. The rapid hop, the quick intelligence of the eye, the tossing back of the head, the jerking motion of the tail, all show a restless active habit. It does not appear that the robin is an emigrant in any part of Britain, neither have we reason to believe that it departs far from its winter habitation when the season arrives for building its nest, yet its activity is most remarkable, and decidedly useful to man. The food of this bird consists chiefly of insects, and in search of them it exerts itself with an assiduity which not the most zealous and persevering of the human race could possibly undergo. In summer the robin may sometimes be seen hovering round and round a leaf on which an insect has alighted, till it has got near enough to pounce suddenly upon its victim. In this way it destroys a vast number of the enemies of the vegetable creation, but not confining itself to this service, it also descends to the ground, where it captures a multitude of worms, ground larvæ, beetles, &c. The whole of the family to which the redbreast belongs may indeed be considered as great conservators of vegetation, and as such should be protected and encouraged. Those who would obtain some idea of the labour performed by the fine-billed birds, would do well to try to pluck the aphides, one by one, from an unhealthy geranium, or some other plant, infested with these insects: they will then know something of the work that is constantly going on in our gardens, shrubberies, and copses, through the agency of the redbreast and its congeners.

The winter labours of the redbreast are scarcely less valuable than its summer occupations. It visits the gardens, orchards, and vineyards early in autumn, and though it does sometimes, in default of other food, take its share in the ripened grapes, it seems at all times disposed to prefer insect food, even at the expense of much greater trouble in procuring it. This industrious bird is the first to begin its work in the morning, and the last to give it up at the close of day. The cause which first attracts it to the dwellings of mankind is probably the number of insects which are kept alive by the artificial heat of such places. The young birds of the season are noted for the plaintive music they make as autumn comes on. At that time two male birds may frequently be heard answering each other from the topmost branches of different trees, with a melodious strain that speaks amid the decline of the year, of the hopes and expectations of another.

Though the robin is very common in this country, the species does not so much abound in any particular spot, as to make it an object of profit to the bird-catcher: but in many parts of France, in the neighbourhood of vineyards these birds are so abundant that the catching of them is a considerable trade; and they are taken to Paris for the gratification of the epicure. But it is necessary to convey them very quickly, for in twenty-four hours they are said to lose the flavour for which they are so much esteemed. The familiarity and curiosity of the redbreast make it an easy prey for the bird-catcher.

In contemplating the qualities with which this bird has been endued, and its utility to man in the exercise of them, we have every reason to be grateful for the beauty and harmony of the arrangements of Providence, by which seemingly insignificant creatures are made so essential to the general good. Nor can we fail to be struck with the fact, that those animals which do not in any way work for the good of man always retire from places as they become peopled and cultivated; while those that are eminently useful, not only stay, but increase in numbers, and follow cultivation into places in which they were not to be found so long as those places were neglected. Thus, in Britain, while eagles and ravens, and also the wild mountain game, and the fishing or scavenger birds by the waters, are all very much confined in locality and diminished in numbers; the field and woodland game birds have multiplied greatly; and the warblers have extended into districts where they were formerly unknown. In such instances there can be little doubt but that the animals which diminish in numbers or disappear, are not wanted in the state of culture, and would be injurious if they were to remain in numbers. Those again which remain where cultivation extends, always have some useful office to perform, whether we understand the nature of that office or not.

RURAL ECONOMY FOR THE MONTHS.

II.

FEBRUARY.

THERE is at times a solemn gloom,
Ere yet the lovely Spring assume
Sole empire, with the lingering cold,
Content divided sway to hold;
A sort of interreign, which throws
On all around a dull repose,
Dull, not unpleasing; when the rest
Nor rain, nor snow, nor winds molest;
Nor aught by listening ear is heard
Save first-fruit notes of vernal bird,
Alone, or with responsive call,
Or sound of tinkling waterfall.
Yet is no radiant brightness seen
To pierce the clouds opposing skreen
Or hazy vapour; and illume
The thickness of that solemn gloom.
Such is the garb, his natal morn
Oft times by *February* worn:
And such the garment that arrays
Full often his succeeding days.——MANT'S *Months.*

IN the "dull, not unpleasing" weather, which frequently prevails at the commencement of the present month, so truly described in the preceding lines, the agriculturist is busily employed in that which he justly considers as the most important of all rural occupations, *i.e.*, ploughing. On the way in which this is performed depends the ease and success of all succeeding operations on the same soil; therefore he is naturally anxious to have it performed in the best and most efficient manner. The plough being a fundamental implement of agriculture, is common to all ages and countries where the cultivation of the soil has formed part of the occupation of the people; hence we find that, in its simplest form, it is almost everywhere the same. The ploughs of the Greeks and Romans were nearly, if not exactly the same as those which afterwards came into use throughout Europe. These remained without alteration until about the sixteenth century, when they received some improvement in their form from the Dutch and Flemish. During the seventeenth and eighteenth centuries the plough underwent great improvement in England, and especially in Scotland; and at the present time there is a great variety of excellent forms of this implement; of which the best for general purposes is the Scotch plough, or, as it is called in Scotland, the improved Scotch plough. Ploughs are either with or without wheels. Wheel-ploughs work with greater steadiness, and less care on the part of the manager than swing-ploughs, but the latter are lighter of draught. It is considered that a district ploughed with wheel-ploughs shows the greatest neatness of work; but that in one where the improved form of swing-plough is generally adopted, the ploughmen are superior workmen, and the work is better done, and with less expense of labour. Ploughmen should, if possible, be yearly servants, residing on the farm, and attached by interest and duty to their master. The way in which labouring men are treated in Scotland appears to us so well worthy of attention, as conducing to the welfare of both master and servant, that we cannot forbear describing it.

In the best cultivated districts of that country, proper houses are built near every farmstead, for the residence of the farm-servants, which gives them an opportunity of settling in life, and greatly tends to promote their future welfare. The farmer has thus also his people within reach at all times. The married servants receive the greater part of their wages in the produce of the soil, which gives them an interest in the prosperity of the concern in which they are employed, and to a certain degree obliges them to eat and drink comfortably; while young men often deny themselves proper food that they may have the more to spend in drinking and in clothes; and thus they are deficient in strength and activity. The habits of sobriety and economy so conspicuous among the farm-servants of Scotland, are found to prevail especially in districts subject to the above management. Another most important feature in this system is, that almost every married man has a cow kept for him all the year round by the farmer. The prospect of enjoying this advantage has an excellent effect upon the morals of young unmarried servants, who generally make it a point to lay up as much of their yearly wages as will be sufficient to buy a cow, and furniture for a house when they enter into the married state. They have also several other perquisites, such as a piece of ground for potatoes and flax, (about one-eighth of an acre,) liberty to keep a pig, half a dozen hens, and bees; their fuel is carried home to them; they receive a small allowance in money per journey when sent from home with corn, or for coals or lime; and, during harvest, they are maintained by the farmer that they may always be at hand. There are nowhere to be met with more active, respectable, and conscientious servants than those who are kept according to this system, and there is hardly such a thing known as one of them requiring relief from the public.

But we return to the operations of the present month, of which ploughing, though the most important, is not the all prevailing one. The able and experienced ploughman is, nevertheless, a valuable person, and it is one of the pleasant sights of February to mark the progress of his work, and the preparations which are making for the approaching spring. We are often reminded of Bloomfield's description of the ploughman's task, during this month.

No wheels support the diving, pointed share;
No groaning ox is doomed to labour there;
No helpmates teach the docile steed his road;
(Alike unknown the ploughboy and the goad;)
But unassisted through each toilsome day
With smiling brows the ploughman cleaves his way,
Draws his fresh parallels, and widening still,
Treads slow the heavy dale, or climbs the hill;
Strong on the wing his busy followers play,
Where writhing earth-worms meet the unwelcome day;
Till all is changed, and hill and level down
Assume a livery of sober brown.

This is also the usual time for sowing beans, an operation which is always performed as soon as possible after winter is over. In the southern parts of England bean-sowing is carried on during January, and in all districts it is completed before the end of March. The mode of sowing is almost always in rows. They are still sometimes sown broad-cast, and sometimes dibbled; but they are for the most part drilled, or deposited after the plough in every furrow, or in every second and third furrow. The quantity of seed allowed per acre is very different in the northern and southern parts of Britain; in the latter, even when the rows are narrow, only two bushels, or two bushels and a half per acre are usually allowed, while in the former four bushels to the acre are employed, with an additional bushel per acre if sown broadcast. The dibbling of beans, that is, planting them in holes made by the hand, is considered an excellent mode of sowing when well performed, but the grand objection seems to be the difficulty of getting it well done. The system of drilling, which was comparatively unknown in England a century ago, is now become so general that it has in a great measure superseded the other methods of sowing. This general employment of the drill may be principally attributed to the introduction of turnip husbandry, and to the observations then made that this method possessed certain advantages which might be made available in the case of other crops. Yet there are some tenacious soils where the drill cannot be profitably employed, as for the proper operation of the machine it is necessary that the soil, at the period of sowing, should be in a pulverised state. Beans are tolerably hardy, and are not much affected by dry frosts, but in the changing weather so common in February they often suffer much, and this is the reason that many

cultivators delay sowing them till the latter end of the month, or the commencement of March. The sorts most esteemed for general field cultivation are the tick bean, the horse bean, and the small Dutch bean. There are varieties of these beans, differing but little from each other, and experience alone can enable the farmer to choose the seed which best suits his land.

The soil which produces good wheat is also that which is best adapted for beans. In rich land of this description extraordinary crops have been obtained, by sowing beans broad-cast, and very thick, the stems being drawn up to a great height and completely smothering the weeds. But this plan would only succeed in favourable seasons; so that the cultivation of beans in rows, with careful hoeing and manuring, is much more generally advantageous. This latter plan is sometimes adopted alternately with wheat crops for many years in succession, without any necessity for change or fallow; as in some parts of Kent. The most approved plan of managing these alternate crops is thus described by an experienced agriculturist.

The beans must be drilled or set in rows, with intervals of from twenty-four to thirty inches between the rows; and the intervals must be repeatedly stirred and hoed with proper instruments, so as to prevent the growth of weeds, and keep the soil in a perfectly clean and mellow state; the weeds which rise in the rows are removed by hand. Immediately after bean harvest the land is scarified, or skimmed over with a plough having a very broad share, whence the operation is sometimes called *broad sharing*. All roots of weeds and the remains of bean-halm are collected and burned, or put into a heap with quick-lime to be converted into manure. The ground is then ploughed once or several times according to circumstances, and wheat is sown about the month of October, either broad-cast or by means of a drilling machine in rows ten or twelve inches asunder, which gives greater facility for hoeing and weeding the crop when necessary. The wheat which follows beans is generally good and heavy, and seldom runs to straw. After wheat harvest the stubble is ploughed up and turned in with a very deep furrow: the land is harrowed flat, and a good coating of manure is put on in a moderately rotten state, and this is covered with a shallow ploughing: the land is well water-furrowed, and left so till spring, when the beans are drilled in the mellow surface produced by the winter's frost.

This method varies according to different soils, and different opinions among cultivators: and we may remark that the distance between the rows, as above-mentioned, is greater than is commonly allowed, eighteen or twenty inches being nearer the average in the case of beans, and from seven to ten inches in that of wheat. In some places pease are sown along with the beans; but as they are apt to twine round the stalks and interfere with the growth of the beans, as well as to impede the operations of hoeing and weeding, this practice is not recommended.

According to the best authorities there is scarcely another crop bearing seed, which gives so great a return with so small an expenditure of the nutritive juices of the soil, as the bean, and none that repays manure better, or leaves the land in a fitter condition for wheat or oats.

The particular period at which spring crops should be sown, is a matter on which there is much diversity of opinion. The present month is chosen by some agriculturists for the sowing of Spring wheat, and if the weather is favourable, barley sowing commences before its close. In our changing climate, it is impossible to fix any particular date, as the best time for getting the crops into the ground; for the advocates of early sowing are of course guided by the state of the weather, and their operations are frequently delayed by the continuance of frost and snow. The nature of the soil has also to be considered; for what would be prudent in one situation, would be quite the reverse in another. In favourable seasons, the early sower may gain a considerable advantage over the advocate for later sowing; but if the weather be inauspicious he may not be so well off as if he had sown a month or two later.

Spring or Summer wheat is a weaker and more delicate plant than Winter or Lammas wheat. The ear is slender and drooping, and is provided with long beards or awns. It is cultivated with the best success in the midland and southern districts of this country; but at the best, the grain is smaller and the produce less abundant than in the commoner sort, so that the farmer probably would not be led to its cultivation, were his land always ready for extensive autumn sowings, and could he ensure success from the earlier sown seed. When through the unpropitious nature of the season, the winter-sown wheat has been so much injured as to destroy all prospects of a harvest, Spring wheat offers a valuable resource to the farmer, and being often sown as late as April or May, little farther danger is likely to accrue to it from the weather, and as it is a rapidly growing species, it may be confidently depended on for yielding its increase. By the analysis of Sir Humphrey Davy we learn that the nutritive quality of Spring wheat is not quite equal to that of Winter wheat, the proportions being 95½ per cent. in the latter, and only 94 per cent. in the former, of the entire bulk of the grains. The gluten varies in a greater degree, that of Winter wheat being 24, while that of spring-sown corn is only 19, so that the Winter variety is most advantageous for the purpose of the baker.

The celebrated Linnæus was of opinion that the best means of regulating the sowing season in any particular district was by the leafing of trees. He recommended the cultivator of the soil, to take notice in what order the different kinds of trees put forth their leaves, according to their species, the heat of the atmosphere, and the nature of the soil, and by comparing the observations of several years to form his judgment as to the time of sowing.

It will be necessary likewise (he remarks,) to observe what sowings made in the different parts of the Spring produce the best crops, that by comparing these with the leafing of trees, it may appear which is the most proper season for sowing; nor will it be amiss in like manner to note at what time certain plants, especially the most remarkable in every province, blow; that it may appear whether the year makes a quicker or slower progress.

The present month generally demands much careful assiduity on the part of the sheep-farmer, for without attention, a serious loss is suffered among the lambs during the cold nights that are usually prevalent. The shepherd cannot finish his task as usual at the close of day, but must be prepared to visit his fold at midnight, to suckle the youngest lambs, and to see that all are warm and sheltered. It is interesting to observe the sudden change in the habits and disposition of the ewe, as soon as she becomes a mother. From being a timid quiet animal, shunning and dreading all around her, she now becomes a fearless guardian of the little one at her side, and ready to meet any danger for its sake.

For ewes that stood aloof with fearful eye,
With stamping foot now men and dogs defy,
And obstinately faithful to their young,
Guard their first steps to join the bleating throng.
But casualties and death, from damps and cold,
Will still attend the well-conducted fold:
Her tender offspring dead, the dam aloud
Calls, and runs wild amidst the unconscious crowd:
And orphan'd sucklings raise the piteous cry;
No wool to warm them, no defenders nigh.

LONDON:
JOHN WILLIAM PARKER, WEST STRAND.
PUBLISHED IN WEEKLY NUMBERS, PRICE ONE PENNY, AND IN MONTHLY PARTS, PRICE SIXPENCE.
Sold by all Booksellers and Newsvenders in the Kingdom.

THE

Saturday Magazine.

No. 620. SUPPLEMENT, FEBRUARY, 1842. { PRICE ONE PENNY.

THE PHILOSOPHY OF THE EXTERNAL SENSES.

THE LISTENING SLAVE*.

(From the Antique Statue in the Royal Gallery of Florence.)

INTRODUCTION.

THE mechanical and chemical functions of the animal body are sufficient for the maintenance of simply vital existence: they are sufficient to continue and support mere vegetative life; but when we regard them as a foundation for the endowment of those higher functions,—sensation, perception, and voluntary motion,—the scheme of nature then becomes opened and displayed in all its grandeur.

To provide for these functions the Divine Architect has introduced into the animal structure a substance endowed with very remarkable properties: the *medullary substance*, which composes the greater part of the brain, the spinal marrow and the nerves, the assemblage of which organs is comprised in the general term, *the nervous system*. The sentient and intelligent principle within us is in some way connected with certain affections of this medullary substance, and constitutes the medium of communication between the world without and the mind within; but how physical effects merge into mental perceptions, science is totally inadequate to explain.

The brain is regarded as the primary and essential organ of sensation, or the organ of which the physical affections are immediately attended by that change in the percipient being which we term sensation. As external objects can in the first instance make impressions only on the organs situated at the surface of the body, a medium of communication is provided between the external organ and the brain by means of *nerves*. These are white cords, consisting of bundles of threads, or filaments of medullary matter, enveloped in sheaths of membrane, and extending continuously from the external organ to the brain, where they all terminate. The nerves, which subserve the purposes of sensation, transmit the impressions they receive at an extremity along their whole course to their termination in the brain, with a velocity that exceeds all powers of computation.

The brain is furnished with a large number of these nerves, which extend from all those parts of the body which are rendered sensible, and unite at their other extremities in that central organ. It is of especial importance that the surface of the body, in particular, should communicate all the impressions received from contact of external bodies; and that these impressions should produce the most distinct perceptions of touch. Hence, the skin is most abundantly supplied with nerves; each nerve, however, communicating a sensation distinguishable from that of every other, so as to enable the mind to discriminate between them, and refer them to their respective origins in different parts of the surface. It is also expedient that the internal organs of the body should have some sensibility; but it is better that this should be very limited in degree, since the occasions are few in which its exercise would be useful, and many in which it would be positively injurious: hence the nerves of sensation are distributed in less abundance to these organs.

The nerves of touch also inform the mind of the qualities

* The Arrotino, or the Grinder, commonly known in England under the name of the Listening Slave, has been supposed by some to have been raised in honour of a slave who detected the secret machinations of the Catilinarian conspiracy. Nothing however is really known relative to the original design of the artist, but its taste and execution are such as seem worthy of the best sculptors of Greece.

of bodies, such for example as warmth or coldness. They also give warning of any action which threatens to be injurious to the part impressed or to the system at large, and this is done by the sensation of pain which the nerves are commissioned to excite on all these occasions. "They act the part of sentinels," says Dr. Roget, "placed at the outposts to give signals of alarm on the approach of danger."

The system of nerves, comprising those which are designed to convey the impressions of touch, is universally present in all classes of animals; and among the lowest orders they appear to constitute the sole medium of communication with the external world. By ascending in the scale of organization, the faculties of perception are found to take a wider range; and many qualities depending on the chemical action of bodies are rendered sensible, more especially those which belong to the substances employed as food. Hence arises the sense of taste, which may be regarded as a new and more refined species of touch. This difference in the nature of the impressions to be conveyed, renders it necessary that the structure of the nerves, or, at least, of those parts of the nerves which are to receive the impression, should be modified and adapted to this particular mode of action.

As the sphere of perception is enlarged, it is made to comprehend, not merely those objects which are actually in contact with the body, but also those at a distance, the existence and properties of which it is highly important the individual should be apprised. It is also necessary that he acquire an accurate knowledge of the distances, situations, and motions of surrounding objects. He is, therefore, provided with suitable organs for vision, for hearing, and for the perception of odours; all of which senses establish extensive relations between him and the external world, and give him the command of various objects which are necessary to supply his wants, or procure him gratification; and which also apprise him of danger while it is yet remote and may be avoided. Endowed with the power of combining all these perceptions, he commences his career of sensitive and intellectual existence; and though he soon learns that he is dependent for most of his sensations on the changes which take place in the external world, he is also conscious of an internal power which gives him some kind of control over many of those changes, and that he moves his limbs by his own voluntary act. We are so much accustomed to the phenomena of sensation and perception, that, in order to understand them, they scarcely appear to require an elaborate investigation. To behold external objects nothing more seems necessary than to direct our eyes towards them; the sight of those objects seems a necessary consequence of the motion of the eyeballs; and there seems not to be anything marvellous in the function of the eye, or that any other organ is required in a simple act of vision. To ascertain the solidity of an object we have but to stretch forth the hand, and to feel in what degree it resists the pressure we give to it. Even this simple exertion is not required for hearing the voices of our companions, or being apprised by the increasing loudness of falling waters, that we are approaching nearer and nearer to the cataract. Yet, how much is really implied in all these apparently simple phenomena! Science teaches us that these perceptions, far from being direct or intuitive, are only the final results of a long series of operations, produced by agents of a most subtle nature, which act by curious and complicated laws upon a refined organization, disposed in particular situations in our bodies, and adjusted with admirable art to receive their impressions, to modify and combine them in a certain order, and to convey them in regular succession, and without confusion, to the immediate seat of sensation.

Yet this process, complicated as it may appear, constitutes but the first stage of the entire function of *perception;* for before the mind can acquire a distinct knowledge of the presence and peculiar qualities of an external object, a long series of mental changes must intervene, and many intel-.ectual operations must be performed. All these take place in such rapid succession that the whole appears to occupy but a single instant. There are, however, according to Dr. Roget, no less than twelve distinguishable kinds of changes, or rather processes, some of which imply many changes, which must always intervene in regular succession between the action of the external object on the organ of sense, and the voluntary movement of that part of the body which it excites.

The external agents which affect the different parts of the nervous system so as to produce sensation, are of different kinds, and are governed by peculiar laws. The structure of the organs must accordingly be adapted in each particular case to receive the impression made by these agents, and must be modified in exact conformity with the physical laws they obey. The eye must be constructed with strict reference to the laws of optics, and the ear to the reception of those minute impressions from the aërial vibrations which occasion sound. The extremities of the nerves in these and other organs of sense are spread out into a delicate expansion of surface, having a softer and more uniform texture than the rest of the nerve, whereby they are susceptible of being affected by their own appropriate agents and by no other.

In most cases the impression made on the sentient extremity of the nerve appropriated to sensation, is not the direct effect of the external body, but results from the agency of some intervening medium. There is always a portion of the organ of sense interposed between the object and the nerve on which the impression is to be made. The object is never allowed to come into direct contact with the nerves; not even in the case of touch, where the organ is defended by the cuticle, through which the impression is made, and by which that impression is modified so as to produce the proper effect on the subjacent nerves. So also with the organs of taste and of smell, the nerves are not only sheathed with cuticle, but defended from too violent an action by a secretion expressly provided for that purpose. In the senses of hearing and of vision, the changes which take place in the organs interposed between the external impressions and the nerves are still more remarkable and important. The objects of these senses, as well as those of smell, being situated at a distance, produce their first impressions by the aid of some medium, exterior to our bodies, through which their influence extends; thus the air is the usual medium through which both light and sound are conveyed to our organs. Hence, in order to understand the whole series of phenomena belonging to sensation, regard must be had to the physical laws which regulate the transmission of these agents. We propose, therefore, to consider these intermediate processes in the case of each of the senses, describing for each organ of sense, first, its structure and the way in which its functions are performed, and secondly, the laws which regulate the physical phenomena by which the organ is affected*.

Section 1.

The eye, which, from the wonderful power of its exterior expression and the extreme beauty of its internal arrangements is called "Nature's master-piece," does not present to our contemplation a more beautiful piece of apparatus than the ear. Indeed, it is difficult, and even invidious, to speak of the excellence of one of Nature's works in particular, since all are excellent, and evince such skill as belongs only to Omnipotence.

Hearing is only a refinement of the sense of touch: a solid while in the act of emitting a sound will convey to the finger placed upon it a sense of rapid motion; it will also communicate to the air a motion by which a series of undulations is excited; each undulation being formed by the advance and recoil of the aërial particles, and communicating with the external ear, imparts motion to its internal mechanism.

It has been thought by physiologists that all animals hear,—that those which are not provided with a distinct organ receive impressions of sound through their nervous system generally, but we find that, according as the animal is low in the scale of creation, its organs are more simple, less is required of them, and accordingly the means furnished to them are adequate only to the performance of their simple parts in the scheme of creation. As an animal rises in the scale of intelligence, so also does its frame become more complex as its wants become multiplied:—we have in it the parts of the lower animal together with something in addition; and so, as we advance, each lower grade has the germ of some additional provision which is developed in the one next above it, until the organ is met with in its most complex and perfect state in man.

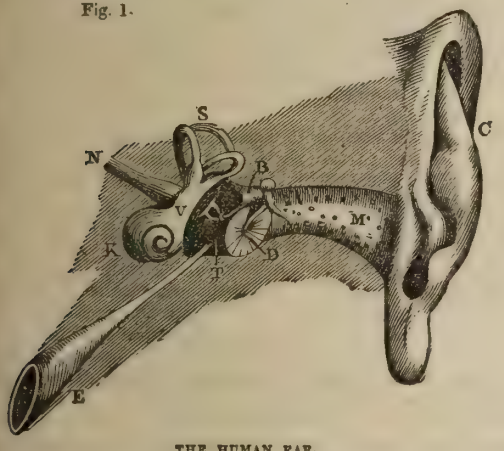
The organ of hearing consists essentially of the expansion of a peculiarly sensitive nerve over a delicate membrane. In the perfect ear there is much additional mechanism, of the particular use of which we are ignorant, but there can be no doubt, since Nature effects her object by the most perfect means, and generally in the shortest way, that the design

* For a more extended view of this important subject, we refer the reader to Dr. Roget's *Bridgewater Treatise.*

of the unexplained portions of the ear is to increase the force and vividness of the impression, to indicate the direction, the difference in pitch, the continuance, and the minute variations of those pulses of sound, which are to be finally communicated to the mind through the medium of the auditory nerve. Other portions probably fit and adjust and retain in a state of fitness and adjustment, the more important parts of the organ, so as to render them, as it were, independent of the atmospheric changes which often so materially influence our sensations.

The parts of the human ear are usually considered under three divisions. 1st, *The external ear*, leading by means of a curved tube to—2nd, the *middle ear*, consisting of the tympanum or drum of the ear, a cavity containing air, a membrane, bones, and a muscular arrangement, all which increase the force or manner of vibration, and convey it to —3rd, the *inner ear*, which contains the labyrinth, a general name applied to the intricate canals which contain the *portio mollis*, or soft portion of the seventh pair of nerves; this then is the proper seat of hearing. In fig. 1 are exhibited in one view, the principal parts of this complicated organ, as they exist in man, in their relative situations, and of their natural size: thereby affording a scale by which the real dimensions of those portions which will afterwards be explained by magnified representations, may be properly appreciated. In all the figures similar parts are indicated by the same letters.

Fig. 1.



THE HUMAN EAR.

1. The form of the shell (*concha*) or external ear, C, is, of course familiar to every one. It projects a little forward, presenting five prominences and three cavities, the whole forming a sort of funnel, which by its concave shape and the sinuosities all leading into each other, is well adapted to the reception and collection of sound. The substance of which it is formed is admirably adapted to its office, being very sensitive, and composed of a firm though elastic cartilage, and provided with small muscles, which stretch or relax it as occasion may require. It is covered by a thin dry skin attached to the cartilage by a strong tissue. Many nerves and blood vessels run through it, whereby its sensibility is great, and it becomes red from a very small exciting cause. The lap of the ear, or that part usually pierced for ear-rings, is peculiar to the human ear. Its texture is very different to the other part of the external ear. Instead of being composed of firm cartilage it is soft and full of fat, a provision made probably to prevent the escape of the sound collected in the windings of the concha when it has reached the entrance of the passage. Analogy would lead us to suppose, from the free motions which other animals give to their ears, that man is also capable of moving his ear towards the direction of the sound without moving his head; and accordingly we find that savages and natives of the Oriental nations generally possess this power, but that the bandages and head-dresses applied to the heads of European infants, prevent, *in limine*, the action of the muscles destined to this motion, and they accordingly dwindle into an insignificant size, with loss of all motive power.

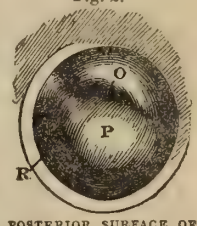
The aperture (M), or entrance into the ear from without, is called the *meatus auditorius externus*, or the external path of hearing. This is a tube about three-fourths of an inch in length, curved into the form of an Italic letter *f*, probably to prevent the sound from being reflected into the air again before the sensation of sound be produced, which would partially be the case if the tube were straight. The structure of this tube is partly bony and partly cartilaginous; it is formed in the petrous or rocky portion of the temporal bone; its surface is covered with a cuticle furnished with short stiff hairs, and also with a set of small glands under the cuticle, which secrete and pour into the meatus their cerumen, which is a wax-like substance of an orange yellow colour and bitter taste; its object is to guard the internal ear from insects, and also it is said to moisten the passage, in the same way that a flute, in order to produce sound, must have its interior surface moist.

Here we may offer a remark against the vulgar prejudice which condemns a harmless insect to the unmitigated horror of the ignorant and the timid, and gives it a name calculated to excite fear and disgust; we refer to the ear-wig. This insect is a nocturnal one, and having a great dread of exposure to the light, one of its kind may possibly by chance have taken shelter in the ear, not for the purpose of resting in and feeding upon the brain, as has been supposed, but simply as a refuge from the light. This, however, is a situation which no ear-wig in its senses would prefer. The ear-wig, in common with all insects, has an especial dislike to the taste and odour of the bitter wax which lines the path of hearing, and an insect would at all times rather avoid the ears of animals than seek them. Small insects have been known to get accidentally into the ear, and to produce uncomfortable sensations by crawling over the membrane of the tympanum, but they soon get out again; and no instance of real injury to the ear by insects is on record.

It has been remarked by Smellie that infants hear bluntly, because the bones of their ears are soft and cartilaginous; and therefore the vibrations excited in them comparatively weak. "Young children accordingly are extremely fond of noise: it rouses their attention, and conveys to them the agreeable sensation of sound; but feeble sounds are not perecived, which gives infants, like deaf persons, the appearance of inattention, or rather of stupidity."

2. The tympanum, T, is an irregular cavity containing air, and communicating with the external air through a tube called the *Eustachian* tube, E, (from the name of the anatomist who first pointed out its use,) which runs by the side of the labyrinth, gradually increasing in width, until it ends in a trumpet-shaped opening behind the curtain which separates the nostrils from the mouth. This is the only means which the internal surface of the tympanum has of communicating with the external air, but by this tube a free access of air is admitted into the cavity to equipoise the atmospheric pressure on the external surface of the membrane of the tympanum, D, and to allow it free motion. This membrane is extended across the inner end of the *meatus auditorius*, where a circular sort of osseous groove is adapted to its reception. It consists externally of a continuation of the cuticle which lines the meatus; there is also an internal layer continuous with that of the cavity beyond it; and a middle layer composed of radiating muscular fibres proceeding from the circumference to the centre, where they are inserted into the extremity of a minute bony process, H, fig. 4. In fig. 1 the inner surface of the tympanum is shown, the cavity T being laid open. The opposite side of the cavity of the tympanum contains a rounded eminence, P, called the promontory; on each side of which is an opening in the bone, closed, however, by the membrane lining the internal surface of the cavity. At the upper edge of the promontory is an opening, O, called the *fenestra ovalis*, or oval window; and the other situated near the under edge R, *fenestra rotunda*, or round window. These are shown in fig. 2.

Fig. 2.

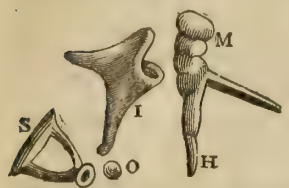


POSTERIOR SURFACE OF THE CAVITY OF THE TYMPANUM.

Any sonorous impulse communicated to the air falling upon the membrane of the tympanum, sets it in motion in a manner somewhat similar to the parchment head of a drum. This is a favourite comparison with most writers, but here all further analogy ends, for although the membrane of the tympanum is tensely stretched, it is not a plane surface like a drum-head, but it is drawn into a funnel shape by the adhesion of the long process of a bone (called the *malleus*) to its centre. This is effected by means of a muscle called the *tensor*, which pulls the malleus inward, and so tightens the membrane as to prevent too energetic a sonorous impression; and there are two other muscles which act in an opposite direction and relax

the membrane. So that, like the ciliary process in the eye, whereby the pupil is made to contract according as the flow of light is copious, and to expand when the abundant stimulus of light is wanting, the membrane of the tympanum is, by a spontaneous adjustment, adapted to the reception of vibrations of various intensities. This membrane has a shining tendinous appearance, and is transparent, since the end or process of the malleus can be seen through it in a strong light.

Fig. 3.



SMALL BONES OF THE TYMPANUM.

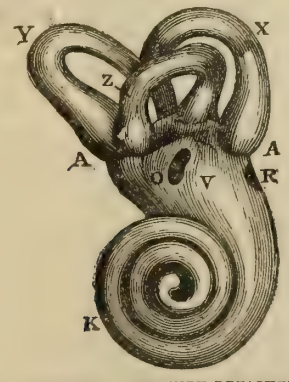
Fig. 4.

POSITION OF THE SMALL BONES IN THE TYMPANUM.

The vibrations of this membrane are transmitted to the *fenestra ovalis*, or oval hole, before alluded to, along a chain of little moveable bones, (B, fig. 1,) articulated with the nicest care. The malleus, M, so called from its rude resemblance to a hammer, being connected at H with the membrane of the tympanum, receives its oscillations, and transmits them to the *incus* or anvil, I, in the upper part of which is a depression which receives the bulbous head of the malleus. The longer leg, or process of the incus, is directed down into the cavity of the tympanum, and has attached to its point the *os orbiculare*, O*, or rounded bone, which in size resembles a grain of sand, and is, indeed, the smallest bone in the body: it is the medium of articulation between the incus and the *stapes*, S, which is the last of the chain of bones now to be described. The stapes accurately resembles a stirrup-iron, but delicately grooved within so as to give lightness to the bone: the base, which answers to that part of the stirrup-iron where the foot rests, is attached to the membrane over the fenestra ovalis, in connexion with the vestibule of the labyrinth, at which we have now arrived.

3. The labyrinth, (so called from those cavities and tubes leading into each other in so intricate a manner as to be traced with much difficulty,) or internal ear, is, as we have said, the proper seat of hearing; it contains the vestibule or middle cavity, V, the semicircular canals, X Y Z, and the cochlea, K. (Fig. 5.) It is seen S, V, K, in fig. 1, p. 83.

Fig. 5.



MAGNIFIED VIEW OF THE LABYRINTH DETACHED FROM THE SURROUNDING PARTS.

The vestibule is a chamber leading into the semicircular canals: these latter are constructed of hard brittle bone, forming tubes of small bore, their diameter being such as not to admit the head of a common pin. They are three in number, and from their positions, vertical, oblique, and horizontal, they severally receive their distinctive names.

The cavity of the osseous labyrinth contains membranes of nearly the shape of the vestibule and semicircular canals; but these membranes do not extend into the cochlea. They compose what has been called the *membranous labyrinth*, (fig. 7,) and form one continuous but closed sac, containing a fluid, perfectly similar in appearance to the perilymph which surrounds it on the outer side, and intervenes between it and the sides of the osseous labyrinth, preventing any contact with those sides. Fig. 6 shows the internal arrangements of the osseous labyrinth on a large scale. The membranous labyrinth is seen floating in the perilymph P. The form of the labyrinth is more distinctly seen in fig. 7, where it is represented in a position exactly corresponding to the former figure, but wholly detached from the bony labyrinth, and connected only with the nervous filaments which are proceeding to be distributed to its different parts.

A simple inspection of these figures will show at once the form and the connections of the three semicircular canals, X Y Z, each of which presents at its origin from the vestibule, a considerable dilatation, termed an *ampulla*, A A A, while, at its other extremity, where it terminates in the vestibule, there is no enlargement of its diameter; and it will also be noticed that two of these canals, X and Y, unite into one before their termination. The same description applies both to the osseous and to the membranous canals contained within them; the space, P, which intervenes between the two, being filled with the perilymph. But the form of the membranous vestibule is not so exact an imitation of that of the osseous cavity; it is composed of two distinct sacs opening into each other; one is called the *utricle*, U, and the other the *sacculus*, S. Each sac contains a small mass of white calcareous matter, O, O, resembling powdered chalk, which seems to be suspended in the fluid contained in the sacs by the intermedium of a number of nervous filaments, proceeding from the auditory nerves G and N, as seen in fig. 7. "From the universal presence of these cretaceous substances in the labyrinth of all the mammalia," (says Dr. Roget, to whom we are indebted for this part of our anatomical description,) "and from their much greater size and hardness in aquatic animals, there can be little doubt that they perform some office of great importance in the physiology of hearing."

The *cochlea* is a convoluted canal, and derives its name from its resemblance to the shell of a snail. Its structure is exceedingly curious, being formed of the spiral convolutions of a tube separated into two compartments, by a partition, L, called the *lamina spiralis*, which extends its whole length except at the very apex of the cone, where it suddenly terminates in a curved point or hook, H, leaving an aperture by which the two portions of the tube communicate together. In fig. 6 a bristle, BB, is passed through this aperture. The central pillar round which these tubes take two and a half circular turns, is called the *modiolus*. Its apex is seen at M. One of these passages is called the *vestibular tube*, in consequence of its arising from the cavity of the vestibule; and the other the *tympanic tube*, because it begins from the inner side of the membrane which closes the fenestra rotunda, and forms the only separation between the interior of that the tube and the cavity of the tympanum. The trunk of the auditory nerve occupies a hollow space immediately behind the ventricle; and its branches pass through minute holes in the bony plate which forms the wall of that cavity; being finally expanded on the different parts of the membranous labyrinth.

In fig. 7 the anterior trunk of the auditory nerve is seen at G, distributing branches of the ampullæ, AA, the utricle, U, and the calcareous body it contains: while the posterior trunk, N, divides into a branch, which supplies the sacculus, S, and its calcareous body, O, and a second branch, K, which is distributed over the cochlea. D is the nerve called the *portio dura*, which merely accompanies the auditory nerve, but has no relation to the sense of hearing. In fig. 1 the auditory nerve, N, is seen entering at the back of the vestibule.

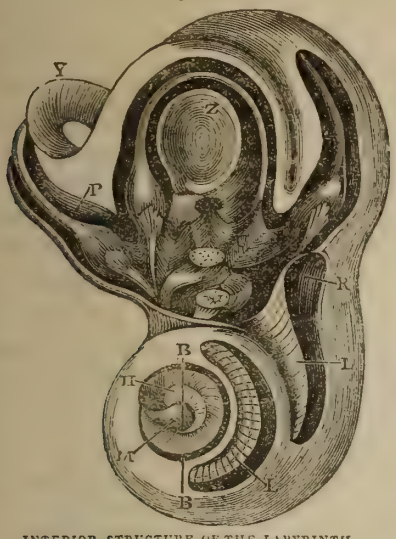
Such is the complicated mechanism of this wonderful structure that mere description fails, even when illustrated by copious drawings. He who would study the anatomy of the ear in all its intricate and mysterious minuteness, must receive his instructions from the hand of nature.

We have seen that the chambers of the external ear and of the tympanum, are filled with air, and the recesses of the labyrinth with water, or at least a thin gelatinous fluid resembling water; called the *perilymph*. When we find any variation in the adaptation of nature, so sure it is that this variation is connected with some admirable design whereby the operation of a particular organ is rendered more efficacious, or more easy in its action; accordingly we find that the essential seat of hearing contains a fluid which transmits sonorous pulses much better than air, and it is exceedingly probable, that did these cavities contain air instead of water, the mind would receive its impressions of sound, compared with its

* Some anatomists do not allow this to be a separate bone, but only a process of the incus.

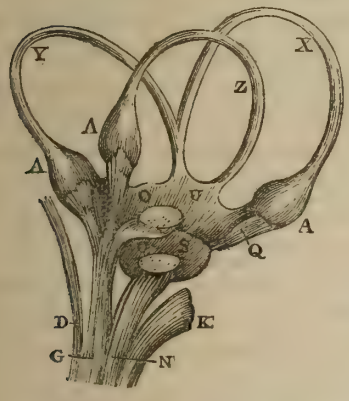
present activity, with painful slowness; but the fact must awaken in our minds emotions of admiration and of gratitude, that we are furnished with means, the very best that can be contrived, for effecting the purposes for which we are placed in the physical world, and that the exercise of those means is attended with pleasure to ourselves and to others, whether as they minister to our natural wants, or assist the operations of the higher powers of the mind.

Fig. 6.



INTERIOR STRUCTURE OF THE LABYRINTH

Fig. 7.



MEMBRANOUS LABYRINTH AND ITS NERVES.

We must now be considered as having traced a single vibration through the meatus auditorius to the membrane of the tympanum, which, being set in motion, communicates its impulse to the little chain of bones. They convey it to the vestibule, whence it passes into the canals and cochlea, whose numerous cavities it probably permeates: it is then taken up by the auditory nerve, conveyed to a particular part of the brain, and constitutes one of those mental impressions which we call a perception. Here, then, is the limit to our knowledge; for how the mind receives its impression through the medium of the auditory nerve is a question which has never been answered, and probably never will be answered.

The following summary of Dr. Sym's views of the mechanical functions of the ear, may be found a useful appendix to the descriptions given above.

1. The external ear, C, *protects* the membrane of the tympanum, D, and contributes to a knowledge of the direction of sounds.

2. The membrane of the tympanum is a *passive* medium of communication of vibrations, and the impulses of the air draw its apex *outwards*.

3. The ossicula, or little bones (figs. 3 and 4,) of the tympanum, form a system of levers by which the extent of the undulations falling on the membrane of the tympanum is diminished, while their momentum is preserved.

4. Vibrations communicated from the larynx to the hammer and anvil, M and I, have their extent *increased* whilst their momentum remains the same.

5. The base of the stirrup, S, is drawn outwards by the impulses of the air, and performs the action of a piston.

6. The muscles of the tympanum antagonize the impulses and restore the membranes and bones to their quiescent positions.

7. The membrana rotunda, R, receives the pressure of the atmosphere through the Eustachian tube, E, so as to enable the stapes to be raised.

8. The water of the labyrinth (fig. 6,) receives the full momentum of the impulses of the air on the membrane of the tympanum without loss from condensation, because the difference of the areas of the membrane of the tympanum and fenestræ ovales, combined with the difference of range of motion of the point of the malleus M and base of the stapes S, is *equal to the difference of specific gravity between air and water*.

9. The perilymph *oscillates* between the two fenestræ, and its alternate fluxes and refluxes over the membranous labyrinth (fig. 7,) excite the sensation of hearing.

10. The cochlea, K, *regulates* the extent of the oscillations of the perilymph by the expansion of its spiral laminæ.

11. The petrous bone *deafens* the internal ear, so as to prevent any vibrations from acting on the perilymph, except those which have been previously adjusted for creating accurate oscillations by being transmitted by the chain of little bones.

Section 2.

We have said that the seat of hearing is to be found in the expanded portions of a nerve found within the cavities of the inner ear, in the same way that the expanded portion of the optic nerve, the retina, is the seat of vision—all the other apparatus, then, of the ear bears the same relation to sound as the membranes, lenses, and humours of the eye bear to light, that is, as so much auxiliary apparatus placed for the purpose of perfecting the final perception communicated to the mind through the agency of the nerve. But we can understand how it is that light passing through transparent media of varying shape and density is refracted and brought to a focus upon the very nerve wherein we suppose resides the seat of vision, but respecting the auxiliary apparatus of the ear our knowledge is so small as to lead us to no certain decision. Nay, we are met with startling facts which would tend to disturb our notions of the simplicity and perfect adaptations of nature, were it not that science teaches us the useful lesson to let our decisions keep pace only with our knowledge: that when the latter is limited in amount, uncertain in its kind, or wanting altogether, we must never be guided by the uncertain gleams of conjecture, but wait for the dawn of the powerful and steady light of well-supported theory.

Were the juices and lenses of the eye to be extruded from their coverlids, irremediable blindness would ensue, although, as far we know, the optic nerve be uninjured; but when the tympanum and chain of bones are removed by design, by accident, or by disease, the mind does not cease to discriminate sounds in the same useful manner, it is said, as before. The cases are not quite parallel, since it is admitted that if the liquid in the labyrinth flow out, deafness ensues, as irremediable as blindness in the other case. The question then has been asked, without ever eliciting a satisfactory reply, "What purpose does this apparatus serve in the economy of the ear, since it may be removed, and hearing not be destroyed?" Now it cannot be contended that this deprivation does not diminish the power of hearing, any more than that the loss of one leg, or of many teeth, does not limit the power of locomotion or of eating. But the amount of diminution is not known, and cannot be known until we arrive at a more perfect knowledge of the functions of these parts. Sir Astley Cooper communicated to the Royal Society, more than thirty years ago, some interesting facts in relation to this subject. A gentleman had been attacked with inflammation and suppuration in both ears, became totally deaf, and continued so for three months: the hearing then began to return, and was restored to the state at which Sir Astley made his observations. The patient "having filled his mouth with air, he closed the nostrils and contracted the cheeks: the air thus compressed was heard to rush through the meatus auditorius, with a whistling noise, and the hair hanging from the temples became agitated by the current of air which issued from the ear. When a candle was applied the flame was agitated in a similar manner." Sir Astley Cooper then passed a probe into each ear, and he thought the membrane on the left side was entirely destroyed, since the probe struck against the petrous portion of the temporal bone. The space usually occupied

by the membrana tympani was found to be an aperture, without one trace of membrane remaining. On the right side also a probe could be passed into the cavity of the tympanum, but here by producing it along the sides of the meatus, some remains of the circumference of the membrane could be discovered, with a circular opening in the centre, about the fourth of an inch in diameter. Now, instead of the total annihilation of the powers of the organ, this gentleman was capable of hearing whatever was said in company, although the membrane of both ears was destroyed. He could even hear better in the ear in which no traces of the membrane remained. This gentleman was only in a small degree deaf from the loss of the membrane, but his ear remained nicely susceptible of musical tones, for he played well on the flute, and had frequently borne a part in a concert, and sung with much taste, and perfectly in tune."

The tympanum being destroyed, and the chain of bones broken, it is absolutely necessary that the stapes retain its place, for if this bone be destroyed, the membrane of the fenestra ovalis will be destroyed, and the fluids of the labyrinth being allowed to flow out, incurable deafness is the certain result. This is a species of deafness which is said to be very common. It is distinguished from that disease which affects the middle and external ear by a very simple test: if the ticking of a watch, held between the teeth, or placed on the mastoid process behind the ear, be not heard at all, or heard very obscurely, it is a proof that the internal ear is diseased: when this is not the case the sound can be heard distinctly, because the bones, &c., placed between the sounding body and the nerve are good conductors of sound.

Musical instruments such as the drum, violin, guitar, &c. are furnished with apertures which serve to connect the resonant volume of air within the instrument with the external air, so that the vibrations of the former are participated in and diffused by the latter. But for these apertures the sounds on the drum would always be *muffled*, and those of stringed instruments faint and ineffective. In the drum of the ear this aperture is provided for by means of the Eustachian tube: by opening the mouth the orifice of this tube is enlarged, and consequently sounds are appreciated with greater ease. One of the characteristics of what the poets call "breathless attention," is the open mouth, a circumstance which did not escape the sagacity of Shakspeare:

> I saw a smith stand with his hammer, thus,
> The whilst his iron did on the anvil cool,
> With open mouth swallowing a tailor's news.
> *King John.*

Any cause, therefore, tending to stop up this channel must prevent the membrana tympani from vibrating, since the cavity will contain a volume of air incapable, from confinement, of exerting its elasticity; and probably its expansion, by animal heat, is such as to press upon the air-tight membrane of the tympanum, and so also prevent any tendency in the latter to vibrate. Accordingly we find that in sore throats, whereby this channel is sometimes closed upon itself, in consequence of inflammation, or by cold, where it is stopped by an accumulation of mucus, deafness ensues, more or less complete according as the disease is violent or slight. A remedy has sometimes been found by dilating the canal by means of a syringe passed through the nostrils, or to the back of the throat. In cases where it is permanently closed, Sir Astley Cooper introduced the practice of puncturing the membrana tympani, so as to give elasticity to the confined air. Many obstinate cases of deafness have instantly yielded to this treatment, although it is said that such punctures heal up very soon.

Sir Charles Bell quotes a curious case from Sauvage of disordered action of the ear, resulting from cold.—"A certain eminent musician, when he blew the German flute, perceived at the same time the proper sound of it, and another sound of the same rhythm or measure, but of a different tone. His hearing seemed thus to be doubled. It was not an echo, for he heard both sounds at one and the same moment: neither were the sounds accordant and harmonious, for that would have been sweet and pleasant to his ear. Having for several days persisted in his attempts, and always been shocked with this grating sound, he at last threw his flute aside. The day before he first became sensible of this strange affection he had imprudently walked in a very cold and damp evening, and was seized with a catarrh in the right side, whence probably it arose that the natural tone of that ear was altered; the sound appeared more grave, and dissonant from that received by the left ear. Having recovered from the catarrh, the distinct hearing of his ear was restored."

Section 3.

There are several considerations respecting the use and action of the membrane of the tympanum, which, as they involve a seeming anomaly, demand some attention.

This membrane has been considered analogous to the parchment head of a drum. Now, we know, both from theory and from experience, that so long as the tension of the parchment remains the same, the tone elicited by its vibration remains constant, whether the impulse which causes it to vibrate be energetic or weak. If therefore the analogy between the two membranes be worth entertaining, the question naturally arises—how does the membrane of the tympanum accommodate itself to the ever-varying velocity of the impulses to which it is submitted during the process of hearing? The head of a drum performs all its vibrations in equal times, so long as its tension remains unaltered. If the sensation, therefore, of hearing be connected with the vibrations of the membrane of the tympanum, it is almost a necessary conclusion that if the membrane vibrate isochronously, the mind would be totally ignorant of difference of pitch in different sounds: all sounds would be the same except in intensity, and the various beautiful modulations of tone which we associate with the term melody would be unknown.

It becomes therefore a legitimate source of inquiry, whether the muscular apparatus of the membrana tympani, or of the malleus, &c., is not endowed with the power of varying the tension of the membrane, so as to adjust it to the varying velocities of vibration; and if so, in what degree does volition bear a part in the adjustment. We may here perhaps add another to the list of analogies observable in the phenomena presented by light and sound, and make it available to the present inquiry. There are two opinions respecting the adjusting powers of the eye to great distances: one, that it is adjusted once for all to objects at varying distances from the observer, and consequently that it has a clear view of these objects at different distances without a new adjustment for each: the other opinion is that the eye cannot be removed from the contemplation of a remote object, to another object less remote, without undergoing a corresponding adjusting change. But it is admitted that for near objects the eye is adjusted for the reception of rays of light proceeding from a certain distance, and that before another object at a different distance can be clearly seen, that the refracting apparatus of the eye undergoes a slight and rapid modification. In what this modification consists, whether in a change of position of the crystalline lens; in an elongation or contraction of the axial diameter of the eye; or a change in diameter of the iris, or in any other change of condition, is not yet decided; we, however, are assured that an adjustment does take place, but whether the mind is cognizant of that adjustment is not so clear; it would seem that rays from an object at a given distance produce a certain physical effect on the eye, which, either through the medium of the will or wholly independent of it, assumes an internal arrangement fitted for focalizing the rays at the retina.

If now it be admissible to extend the same principle to the action of the ear, the difference between the parchment head of a drum and the membrana tympani of the ear would be analogous to the difference between an assemblage of glass lenses and the refracting apparatus of the eye: in each case the natural instrument acts on the same principle as the artificial, but is susceptible of minute spontaneous changes in its interior mechanism, minute causes producing mighty effects in the use to us of the instrument, which is observed in no work of art, and which brings us to the irresistible conclusion that

The Hand that made it is divine.

If we are correct in this view we must assume that when an aërial impulse is communicated to the membrane of the tympanum the muscular apparatus by which the latter is stretched becomes (either voluntarily or involuntarily) impelled to the production of such a tension in the membrane as will fit it for vibrating isochronously with the aërial molecules from which the impulse was derived. It may be objected to this opinion that it involves the necessary consequence that during the simultaneous production of two or more musical sounds, the same tension of the membrane must be available for all; but it by no means follows that when two notes are sounded at the same, or

nearly at the same time, that the mind is conscious of them at the same precise moment; we think that the two notes are heard in succession, however rapid and however minute the point of time between them, still in succession. When we hear an orchestra play a piece of music, we are conscious of a general effect resulting from a general impulse given to the ear, but we are not conscious of one particular performer unless we direct our particular attention to him, and in so doing we abstract our attention from the rest; and although we get a vague impression of what the rest are doing, it is only by alternately attending to the one favourite performer and to his associates. Again, when a chord is struck upon any instrument or instruments we are not conscious at the moment of the individual notes which compose that chord; the general effect is harmonious and pleasing, resulting from an harmonious impulse given to the air, and it is by an after process of mental analysis that we decompose the chord into its component parts. So rapidly does the mind receive general impressions, and resolve them into particular ones, that we are apt to blend the first impression and the after decomposing process into one; as when we hear an echo, if too near the reflecting surface, the real and the reflected sound become incorporated into one; we hear the echo, but are not conscious of it.

When viewing a sheet of white paper, my mind informs me that the eye receives at least three impressions, one of red, one of yellow, and a third of blue, that each is the result of a rapidity of vibration different from that of the other two, which in their turn differ from each other; this is evidently a mental process, an exercise of reason over perception, for my eye tells me it is white. Again, when the eye is pleased with a skilful combination of colours, the pleasure is afforded by the tendency those colours have to combine in order to form white light; other colours which interfere with this tendency stand out and offend the eye in the same way that discordant notes stand out and assume that isolated character which offends the ear.

But however we regard the membrana tympani, if it be considered as a stretched elastic membrane considerable perplexity will attend our efforts to explain its facility of yielding to vibrations of varying velocities: it is only within a few years that experiment has thrown anything like a clear light on the subject. This has been done by the researches of M. Savart, the most successful cultivator of the science of sound of the present age. The labours also of M. Flourens and of M. Magendie have not a little contributed to our knowledge of the functions of the various parts of the ear.

M. Savart submitted the ears of animals to experiment. Having removed the temporal bone, he made with a saw a section parallel to the external surface of the membrane, so as to lay it open, and to be enabled to cover it with sand; when a vibrating plate was brought parallel with the membrane, and very near its surface, a slight motion was observed in the sand; but, from the limited extent of surface, and particularly from its form, no nodal lines could be observed. This experiment was with the human tympanum; but when that of a calf's ear was substituted, the motions of the sand were very distinct.

He observed that when the malleus acted and its tensor muscle tightened the membrane, it was more difficult to produce motions in the grains of sand; hence the use of this muscle appeared evident. The malleus also has an important influence on the motions of the membrana tympani. If a small wooden rod reduced at its edges, be fixed on a stretched membrane, extending from the centre to the circumference or even beyond, and the surface of the membrane be covered with sand, the figures produced upon its surface will be modified by the presence of the little rod, which will be made to vibrate so strongly, that very distinct nodal lines will be produced in it.

It appears then, that the membrane of the tympanum may be considered as destitute of all elasticity, and so fitted to receive impressions of varying velocity*: that the office of the malleus is, first, to modify by means of its muscles the tension of the membrane, in order to protect the organ from too intense impressions, and to dispose it to the reception of such as are very weak. Secondly, the malleus reciprocates the motions of the membrane, and communicates them along the chain of bones to the membranes of the fenestra ovalis. Now it is probable that were it not for the membrane of the tympanum, the membranes which close the entrances of the labyrinth being constantly exposed to the external atmospheric air, their elastic state would be continually influenced by changes in temperature and other causes. It is therefore imagined, that the use of the membrana tympani is to prevent the contact of the external air, and that the cavity of the tympanum is to preserve a volume of air at the constant temperature of the body; for coming as it does along the Eustachian tube it is warmed in its progress, and an atmosphere is established before the labyrinth, whose properties are invariable: a portion of the great temporal artery is separated from the cavity of the tympanum only by a very thin bony partition, and this it is supposed is of some importance in the process of audition.

The following experiment, due also to Savart, shews, that the outer ear and its meatus auditorius serve to render the aërial vibrations more intense, to reciprocate the vibrations of the air, and to transmit them to the membrane of the tympanum with the same or nearly the same degree of force, whatever be their direction. A conical tube made of thin card-board, and of large diameter at the base, received at its smaller truncated end a membrane which was firmly fixed: on bringing a vibrating plate parallel to the upper external surface of this membrane, which was covered with sand, the grains of sand were only slightly agitated: but on holding the plate near the large orifice of the tube they vibrated strongly. Another conical tube was opposed by its summit to the preceding one, but without touching the membrane; the vibrating plate was afterwards held at the orifice of each of the tubes, when it was observed that the motions communicated to the membrane were far more energetic when the aërial undulations arrived through the tube which was in immediate contact with the membrane, than when they arrived through the other, with which it was not in contact.

Flourens performed some most extraordinary experiments on the ears of birds, by which it appears that the nerves in the canals of the labyrinth have other uses in addition to their more direct object of conveying the sensation of sound to the brain: they serve in some mysterious manner to give the animals the power of balancing themselves upon their feet, and directing their motions. This provision seems to be especially necessary to animals which roost and sleep upon their perches: any noise falling upon their ear and tending to awaken them suddenly, would probably also cause them to drop from off their perches; it is said then that any motion of their tympanum serves to contract their claws, and so when suddenly roused they have a firm hold on the perch upon which they rest.

Section 4.

The powers of the human ear to discriminate sounds vary with different individuals. The functions of the ear vary, in common with other functions of the body, with the states of health, as also with age. It would also seem to vary at different times of the day, since it has been observed by Savart, that small steel rods producing upwards of 24,000 vibrations per second, yielded a sound which he could sometimes hear and sometimes could not hear; he supposes either that his ear was more sensible at one time than at another; or that his mode of inducing vibration was not always precisely the same.

Dr. Wollaston made the curious discovery that many persons having a distinct and perfect perception of all common sounds, are at the same time completely insensible to such as are at one or other extremity of the scale of musical notes, the hearing or not hearing of which seems to depend wholly on the pitch, or frequency of vibration constituting the note, and not upon the intensity or loudness of the noise.

Although persons labouring under common deafness have an imperfect perception of all sounds, the degree of indis-

* There are a few peculiarities connected with the vibration of a stretched membrane which may be noticed here, in order to render the experiments detailed in the text intelligible. One of the best modes of obtaining a stretched membrane is by wetting very thin paper, stretching it over a goblet glass, such as a soda water glass, folding it down, and securing the edges with a solution of gum. This when perfectly dry will present a dense surface, inclosing a volume of air, and susceptible of small vibrating impulses, which may be detected by sifting upon the surface a thin layer of dry lycopodium. If now we hold over and parallel to this membrane a vibrating plate of glass the figure which the powder would have assumed had it been upon the glass, will be assumed by the powder on the membrane. In this way a large variety of figures may be obtained by employing various plates, vibrating in different ways. By breathing upon the paper the moisture varies its tension, and the consequent figure is also varied, which gradually reassumes its first form as the moisture evaporates, provided the plate near it be kept vibrating. The tones of a musical instrument held near the membrane will arrange the powder into figures, which change as often as the tones which produce them are varied.

tinctness of different sounds is commonly not the same; for it will be found that they usually hear sharp sounds much better than low ones; they distinguish the voices of women and children better than the deeper tones of men; and the generality of persons accustomed to speak to those who are deaf employ a *shriller* tone of voice, by which they are heard better than by merely speaking louder.

In persons not so afflicted, when the mouth and nose are shut, the tympanum may be so exhausted by a forcible attempt to take breath by expansion of the chest, that the pressure of the external air is strongly felt upon the membrana tympani, and that in this state of tension, from external pressure, the ear becomes insensible to grave tones, without losing in any degree the perception of sharper sounds.

The state to which the ear is thus reduced by exhaustion may even be preserved for a certain time without the continued effort of inspiration, and without even stopping the breath, since, by sudden cessation of the effort, the internal passage to the ear becomes closed by the flexibility of the Eustachian tube, which acts as a valve, and prevents the return of air into the tympanum. This state may be removed by the simple act of swallowing, which opens the tube and restores equilibrium by letting in the air.

Dr. Wollaston found that he could thus render his own ears insensible to all sounds below F marked by the bass cleff. He compares the effect to the mechanical separation of larger and smaller bodies by a sieve. "If," says he, "I strike the table before me with the end of my finger, the whole board sounds with a deep dull note. If I strike it with my nail, there is also at the same time a sharp sound produced by quicker vibrations of parts around the point of contact. When the ear is exhausted, it hears only the latter sound, without perceiving in any degree the deeper note of the whole table. In the same manner in listening to the sound of a carriage, the deeper rumbling noise of the body is no longer heard by an exhausted ear, but the rattle of a chain or loose screw remains at least as audible as before exhaustion."

The effect at a concert is amusing when the great mass of louder sounds is suppressed, and the shriller ones more distinctly heard even to the rattling of the keys of a bad instrument, or scraping of catgut unskilfully touched.

In the natural healthy state of the human ear there does not seem to be any strict limit to our power of discerning low sounds. In listening to those pulsatory vibrations of the air of which sound consists, if they become less and less frequent, we may doubt at what point tones suited to produce any musical effect terminate. Yet all persons but those whose organs are palpably defective continue sensible of vibratory motion, until it becomes a mere tremor, which may be felt, and even almost counted.

On the contrary, if we turn our attention to the opposite extremity of the scale of audible sounds, and with a series of pipes exceeding each other in sharpness, if we examine the effects of them successively upon the ears of any considerable number of persons, we shall find (even within the range of those tones which are produced for their musical effects,) a very distinct and striking difference between the powers of different individuals, whose organs of hearing are in other respects perfect, and shall have reason to infer that human hearing in general is more confined than has been supposed, with regard to its perception of very acute sounds, and has, probably, in every instance, some definite limit, at no great distance beyond the sounds ordinarily heard.

Dr. Wollaston gives the case of a gentleman whose power of hearing sharp sounds terminated at a note four octaves above the middle E of the pianoforte; also two other cases of persons incapable of distinguishing the chirping of the grasshopper (*Gryllus campestris*,) in the hedges during a summer's evening; also that of a gentleman who could never hear the chirping of a common house-sparrow. "This latter," he says, "is the lowest limit to acute hearing that I have ever met with, and I believe it to be extremely rare. Deafness, even to the chirping of the house-cricket, which is several notes higher, is not common. Inability to hear the piercing squeak of the bat seems not very rare, as I have met with several instances of persons not aware of such a sound."

Dr. Wollaston is inclined to think that at the limit of hearing, the interval of a single note between two sounds may be sufficient to render the higher note inaudible, although the lower note is heard distinctly.

"The suddenness of the transition from perfect hearing to total want of perception occasions a degree of surprise, which renders an experiment on this subject with a series of small pipes among several persons rather amusing. It is curious to observe the change of feeling manifested by various individuals of the party, in succession, as the sounds approach and pass the limits of their hearing. Those who enjoy a temporary triumph, are often compelled, in their turn, to acknowledge to how short a distance their little superiority extends.

"Though it has not yet occurred to me to observe a limit to the hearing of sharp sound in any persons under twenty years of age, I am persuaded, by the account that I have received from others, that the youngest ears are liable to the same kind of insensibility. I have conversed with more than one person who never heard the cricket or the bat, and it appears far more likely that such sounds were always beyond their powers of perception, than that they never had been uttered in their presence.

"The range of human hearing comprised between the lowest notes of the organ and the highest known cry of insects, includes more than nine octaves, the whole of which are distinctly perceptible by most ears, although the vibrations of a note at the higher extreme are six or seven hundredfold more frequent than those which constitute the greatest audible sound.

"Since there is nothing in the constitution of the atmosphere to prevent the existence of vibrations incomparably more frequent than any of which we are conscious, we may imagine that animals like the *grylli*, whose powers appear to commence nearly where ours' terminate, may have the faculty of hearing still sharper sounds, which at present we do not know to exist, and that there may be other insects hearing nothing in common with us, but endued with a power of exciting, and a sense that perceives vibrations, of the same nature, indeed, as those which constitute our ordinary sounds, but so remote, that the animals who perceive them may be said to possess another sense, agreeing with our own solely in the medium by which it is excited, and possibly wholly unaffected by those slower vibrations of which we are sensible."

It has been remarked that the ear is capable of perceiving four or five hundred variations of tone, and probably as many different degrees of intensity; by combining these, we have above 20,000 simple sounds that differ either in tone or strength, supposing every tone to be perfect. How wonderful then is that mechanism which enables the mind to discriminate so nicely, and to be able to decide by its aid alone the infinity of sources which produce sound. The tones of musical instruments are as peculiar as the voices of animals. Natural sounds are well known from artificial, and we often need not the assistance of another sense to decide upon one individual out of a thousand varieties of sounds around us. We are even capable of appreciating the minute shade of difference between two notes, one due to a velocity of 400 and the other of 405 vibrations in a second, a rapidity of motion and a minuteness of difference which we might almost be pardoned for thinking beyond the range of mental perception.

In concluding this short account of the ear and of some of its functions, we may remark that there is none other of the perceptive faculties, which, considered with reference to the organic means which connect them with external nature, more amply repays a philosophical inquiry into its modes of operation. The mind turns from the contemplation of the exquisite and delicate mechanism of this organ, with admiration; not with the admiration of knowledge, but rather with that which the aspect of a sublime and difficult problem induces on the mind of the accomplished student of nature: he may be unable to afford a full solution of it, he looks therefore to advancing science for more perfect and more powerful means for effecting the solution, and although such means may be in "the dim and misty future," he is content to apply the amount of his present knowledge to explain, as far it goes, the works of God, so as to prepare himself and his fellow-creatures the better to appreciate the infinite wisdom and goodness of Our Father in Heaven.

LONDON:

JOHN WILLIAM PARKER, WEST STRAND.

PUBLISHED IN WEEKLY NUMBERS, PRICE ONE PENNY, AND IN MONTHLY PARTS, PRICE SIXPENCE.

Sold by all Booksellers and Newsvenders in the Kingdom.

THE

Saturday Magazine.

No. 621. MARCH 5TH, 1842. { PRICE ONE PENNY

THE PRINCESS DORIA WASHING THE FEET OF THE PILGRIMS. FROM WILKIE'S PICTURE.

SIR DAVID WILKIE AND HIS WORKS.

III.

In November, 1809, Wilkie became an Associate of the Royal Academy. In the exhibition of the following May he had no picture: he was probably anxious to show that the honours conferred upon him, as well as the new dignity that awaited him, deserved the exertion of his best powers, the results of which could only be produced by time and careful study. In February, 1811, he was made an Academician, and gave as his presentation picture, his "Boys digging for rats." In this year, he exhibited "a Gamekeeper" and "a Humorous scene." In 1812 he exhibited a sketch of his celebrated "Blindman's Buff," and "The Village Festival. This picture was sold to Mr. Angerstein, for nine hundred guineas, and as it is now in the National Gallery accessible to every one of our readers in London, the following elaborate critique may be acceptable.

This picture represents the circumstances likely to occur at the door of a village alehouse on a warm summer evening, when the labours of the day are done, and its fatigues have tempted some of the villagers to take something more than their needful repose. It consists of three principal groups and several subordinate ones, scattered about the scene in a somewhat unskilful and unsatisfactory manner, as far as relates to mere composition, but full of the most rich and admirable detail. The centre group represents a contest between two parties—a set of half-tipsy merry-makers, and a village housewife and her daughter—as to which shall get posession of the person of an idle husband, whom the latter have come to fetch home. There is a homely and pathetic truth in the expression of the wife, that is delightful. Anybody but Wilkie would have made her a shrew. The imploring expression of the daughter —which is conveyed by the air an attitude alone, her face not being seen—is also admirable. These are richly but perhaps somewhat too forcibly contrasted with the coarse merriment of the boozers who wish to retain their companion. The principal figure in this group the husband— is the least expressive part of it. It seems a matter nearly of indifference to him whether the contest is decided for "go or stay." The colouring of this group is exquisite in every part: perhaps superior to any thing else from the hand of this artist. The left-hand group of the three is even more rich in the expression appropriate to the subject, than the one just described. The face of the sot who is holding up the bottle is absolutely perfect. It is unquestionably superior in its way to any one face that has proceeded from the pencil of any artist, living or dead, with the exception of two or three others by Wilkie himself. That of the landlord also, who is pouring out the ale, and who seems to contrive to keep himself just sober enough to make his guests tipsy, is no less true than rich. The black who forms the third of this group is not so good; he is not black but red. It is very rare to see this artist sacrifice truth to harmony of effect: he had better left the head out altogether, than have done so in this instance. The third principal division of the composition, occupying the right corner, contains two or three exquisite morceaux both of colouring and expression. The girl holding the fat infant is an admirable study, designed with infinite ease, and coloured with great sweetness. Indeed, the colouring of many parts of this picture, in breadth, sweetness and purity, is perhaps superior to any other from this painter, whose *forte* certainly does not lie in that department of his art. And, in fact, it is only of individual parts that the above is true even with regard to this picture. As a whole it is scattered, confused and unsatisfactory in this respect. The only other portion of this group which requires particular mention, is the face, figure and whole department of the nice old woman who is just finding her idle drunken son half asleep behind the horse trough. The sight, painful as it evidently is to her, is scarcely capable of moving her from that staid gravity which becomes her age and character, for she is evidently one of the matronly oracles of the village, and perhaps the schoolmistress. The secondary groups in this picture do not demand any detailed description.

The fault of this work (and it is a great one) is a want of unity and compression in the composition; and consequently a want of general compactness and singleness of effect. Unlike one of Teniers' great works of this kind, it tells like two or three different pictures, instead of like one consistent and necessarily connected whole. The immense size of the buildings as compared with that of the figures, increases this defect. The work, however, displays infinite talent, both of mind and of hand; but certainly more of the latter than of the former.

In 1813 Wilkie exhibited "Blindman's Buff," now in the Royal collection; in 1814, "The Letter of Introduction," for which he received 200 guineas from Mr. Dobree, of Walthamstow; and "Duncan Gray," or "The Refusal," which some time ago at the price of 450*l.* passed into the collection of Mr. Sheepshanks.

In 1815 he exhibited his "Distress for Rent," noticed in our former article. The next year he exhibited his "Rabbit on the Wall," and during several successive years he produced the following works, the titles of which will doubtless call up many pleasant recollections either of the pictures themselves, or of the capital engravings that have been made from them. "The Breakfast;" The Errand Boy;" The Abbotsford Family;" now at Huntly Burn. "The Penny Wedding;" a commission from the Prince Regent. "The Reading of the Will;" a commission to the amount of 450 guineas from the King of Bavaria. "Guess my Name;" "The Newsmongers;" "Chelsea Pensioners reading the Gazette of the Battle of Waterloo;" painted for the Duke of Wellington, for 1200*l.*, by far the largest sum the artist had then received for one performance. "The Parish Beadle;" "Smugglers offering run goods for sale or concealment;" "The Cottage Toilet; "A Scene from the Gentle Shepherd;" and "The Highland Family."

During the years 1826, 1827, and 1828, Wilkie visited Italy and the Peninsula, and on his return surprised the world of art and the public generally, by an entire change of style and subject. Italy had long been the school for artists of all degrees of merit, Wilkie therefore turned to Spanish art and Spanish subjects, for the production of picturesque novelties, which he hoped would attract and command attention. He returned laden with sketches, and had completed several pictures, among which were "The Spanish Posada;" "The Maid of Saragossa;" "The Guerilla's departure;" and "The Guerilla's return;" four pictures that His Majesty King George the Fourth secured when the artist's foreign labours were unpacked.

On the death of Sir Thomas Lawrence, in 1830, Wilkie was appointed to the office of principal painter in ordinary to his Majesty. He was then engaged with the portrait of King George the Fourth, in his Highland dress, and his royal patron's reception at Holyrood. He now, to the regret of many lovers of art, took to portraiture, and his portraits show something of the style of his favourite Velasquez. But he did not neglect the higher branch of his art, for in 1832 he exhibited "John Knox preaching after his return from banishment;" purchased by Sir Robert Peel, for 1500*l.* In this picture we see the well-known Reformer in the full fervour of discourse: below him on one side are a group of his disciples, watching and listening to him with the deepest attention, while a higher class of his adherents occupy the front benches: these are all portraits. Particularly beautiful is the figure of a young female in full light, her whole soul apparently absorbed by the discourse; while another female, purposely thrown into shadow, serves as a background. Further behind, in half light and placed on elevated seats, are seen the ranks of the Roman Catholic clergy, their bishop at their head, who evidently can hardly restrain the expression of his anger. In the galleries still deeper in the back-ground are the members of the government; beneath them, the common people. In the treatment of the different characters, and in the arrangement of the whole, such a nice distinction between the various parties of that period is preserved, that the composition justly assumes the rank of an historical picture. The peculiarities also of the Scottish kirk are

in many respects rendered with the greatest fidelity, and introduced with manifest advantage to the picture; for instance, a sitting group by the pulpit of two women and an infant brought for baptism, which come finely into contrast with the figures of Knox and his pupils.

At the time when M. Pasavant was collecting materials for his work on English art, he was invited by Wilkie to visit him in his studio. M. Pasavant deseribes the artist's method of working, which was to prepare mahogany panels with a chalk ground without oil; then to draw the outline of the picture; he then covered the whole with a mixture of transparent brownish colour, and at length painted fresh in, subsequently glazing different portions as the keeping of the whole might require.

Wilkie showed this gentleman several of his sketches made on the Continent, and intended for pictures which he did not live to execute. Two of them had reference to Napoleon. The first represents the conqueror standing in the full pride of his power before the seated figure of Pope Pius VII., holding in his hand a document which he wants to compel this latter to sign, while the Pope, with all the dignity of conscious right, firmly rejects his propositions. In the other sketch Napoleon is seen at the Hospice of Mount St. Bernard, warming his hands before a fire; by his side is the priest, who with monkish inquisitiveness asked him what he intended doing with his great army, to which Napoleon answered sharply, "That's a secret: and if my hat even knew it I'd throw it into the fire." This anecdote Wilkie had from the lips of the monk himself, and his pencil has well characterized the moment.

Between the years 1832 and 1841 Wilkie exhibited many fine pictures and portraits, among which may be noticed, his "Spanish Monks," a scene witnessed in a Capuchin convent at Toledo. "Spanish Mother and Child;" "Columbus;" "The Peep-o-Day-Boys' Cabin;" "Mary Queen of Scots escaping from Lochleven Castle;" "The Cotter's Saturday-night;" "The Empress Josephine and the Fortune-teller;" "Queen Victoria's First Council;" "Sir David Baird finding the body of Tippoo Saib;" "Grace before Meat;" "Benvenuto Cellini and the Pope;" "The Irish Whisky Still." Among his unfinished works was "Nelson sealing a Letter," and "John Knox administering the Sacrament."

It was but the other day (says a writer in the *Athenæum*), that we rejoiced in the departure of this great painter for the East, and saw in fancy a series of delightful pictures, in which the Eastern costume and character were brightly stamped. Letters arrived both from Turkey and Palestine, wherein he expressed his delight in the strange lands and nations he was visiting; nor were his communications without their devout sympathy with the hills and vales which, when a boy, he had seen by the light of Scripture. His pleasure when, on entering the harbour of St Jean D'Acre, he saw the hills of the Holy Land, he described as amounting to rapture.

It has for some time been reported in the newspapers that Sir David was ill, yet he could scarcely be called ailing, either during his voyage to Egypt, or his residence there, where he painted the portrait of Mehemet Ali, and made numerous sketches; indeed, so far as we can learn, his health did not appear to have suffered till he reached Malta, where, oppressed it is said by the heat, he ate freely of fruit, and drank some iced lemonade. According to the published accounts, on the 31st of May last, the *Oriental* steamer, on board of which Sir David and his friend Mr. Woodburne were passengers, entered Gibraltar Bay, and received her despatches. "Shortly after she had got under weigh, six o'clock A.M., Mr. Woodburne went into Sir David's berth to request he would come up and breakfast with the company; he replied, that he should probably do so, but he should like to see the doctor. Mr. Gattie, a medical gentleman, then came to him, and soon returned to Mr. Woodburne with an assurance that his friend was in a very dangerous state. Mr. Woodburne, being greatly alarmed, asked Dr. Brown (who was with Sir James Carnac), to consult Mr. Gattie as to what could be done to save his friend; and the two medical gentlemen made every exertion and applied all the usual remedies within their reach, without avail. Sir David kept gradually sinking, but did not appear to experience any bodily suffering, and became unconscious about half-past seven, and at eight o'clock he ceased to breathe, his friends and the physicians being with him all the time. The passengers assembled to consult what was to be done, and they requested the captain to return and land the body at Gibraltar. He did return, but the orders of the Governor are so strict, that the remains could not be allowed to come on shore, and therefore the last sad office of committing his body to the deep was performed in the most solemn and impressive manner as the *Oriental* stood out of the bay on her way to England."

When the news of Sir David's death reached England every one seemed to feel his loss as that of a friend, connected to us by so many pleasant associations. Among other testimonies of respect the touching address to the brother and sister of the artist from the President and Council of the Royal Academy deserves notice here.

To THOMAS WILKIE, Esq., the brother, and MISS HELEN WILKIE, the sister, of the late SIR DAVID WILKIE, R.A.

The President and Council of the Royal Academy, although reluctant to obtrude on sorrows too recent and severe to admit of present alleviation, yet cannot resist the anxious desire they feel, respectfully to manifest to the family of the late Sir David Wilkie how deeply they sympathize in the loss they have sustained by the lamentable and untimely death of that great painter. Connected with him for many years, socially and professionally, as an important member of their body, the Academy are fully sensible how much they have been indebted to his valuable services as a man and an artist; they largely participate, therefore, in the grief and regret which have been so generally excited by an event that has deprived the arts and his country of one of their most distinguished ornaments. The President and Council are well aware that time alone can assuage the sufferings of affection under such a bereavement; but they sincerely hope that when calmer feelings shall succeed to more acute emotions, the relatives and friends of this eminent man will derive much consolation from the reflection, that although he has been unhappily cut off in the full vigour of his powers, he lived long enough for his fame, that his works are known and admired wherever the arts are appreciated, and that he has achieved a celebrity unsurpassed in modern times.

An address was at the same time conveyed through the Royal Academy to Mr. and Miss Wilkie from the profession at large, expressive of the high sense they entertained of his eminent talents and moral worth.

HIGH is the bliss that waits on wedded love,
Best, purest, emblem of the bliss above!
To draw new raptures from another's joy,
To share each grief, and half its sting destroy;
Of one fond heart to be the slave and lord,
Bless and be bless'd, adore and be ador'd;
To own the link of soul, the chain of mind,
Sublimest friendship, passion most refined,
Passion, to life's last evening-hour still warm,
And Friendship, brightest in the darkest storm;—
Lives there, but would, for blessings so divine,
The crowded Harem's sullen joys resign?—

From ROLLESTON'S *Prize Poem of "Mahomet."*

DEATH may be said, with almost equal propriety, to confer as well as to level all distinctions. In consequence of that event, a kind of chemical operation takes place; for those characters which were mixed with the gross particles of vice, by being thrown into the alembic of flattery, are sublimated into the essence of virtue. He who, during the performance of his part upon the stage of the world, was little if at all applauded, after the close of the drama is portrayed as the favourite of every virtue under heaven. To save the opulent from oblivion, the sculptor unites his labours with the scholar or the poet, whilst the rustic is indebted for his mite of posthumous renown to the carpenter, the joiner, or the mason. The structures of fame are, in both cases, built with materials whose duration is short. It may check the sallies of pride to reflect on the mortality of men; but for his complete humiliation, let it be remembered, that epitaphs and monuments decay.—BISHOP HORNE.

EASY LESSONS IN CHESS.

THE beneficial influence of the game of chess has been so completely acknowledged by many pious, learned and eminent men, that it would be superfluous to give any lengthy statement of our reasons for inviting the attention of our readers to its practical details. The only plausible objection to it we have ever heard is, that "it answers no useful purpose," and therefore involves a "waste of time." In reply to this we would inquire, are all our actions to be restricted to the one purpose of *utility?* Is it possible, constituted as we are, to find at all times sufficient recreation in the mere exchange of one duty for another? Are there not moments when the mind as imperatively calls for diversion, as the body for exercise? If this be granted, and we see not how it can be denied, then we must be allowed to express our own conviction, that, provided chess be restricted to leisure hours, its general introduction into families and schools would be productive of benefit. It is capable of affording innocent recreation, and healthy mental exercise to most persons. To thread the mazes of its wonderful and numberless combinations requires the exertion of caution, forbearance, and forethought:—it produces none of the pernicious excitement of games of chance; nothing is staked upon the issue of the game but skill, and in the attainment of that skill, the mental powers are called into agreeable exercise.

The greater number of chess players to be met with in private society seem to know little or nothing of the wide extent and variety of this game. For want of a little study, they have but *one* method of opening their play, and they consider the first eight or ten moves as a sort of routine or necessary preliminary to the game, and as such to require little or no care. But the reverse of this is the case:—the ORDER Chess comprises many GENERA; to each genus belong numerous SPECIES; and the first few moves determine the genus and species of the game. Even among experienced players the fate of many a game depends upon the correctness of the opening moves. The science of chess, as well as any other science, requires a knowledge of all its classifications, and the peculiarities of each, not only as essential to good play, but also as conducive to that wonderful variety for which chess is so remarkable. Without this knowledge the game soon becomes insipid, because the players soon acquire a mutual understanding of each other's opening moves, and consequently every game is but a tame repetition of those which they had played before. It is for such players that our *easy lessons in chess* will be valuable. They will form a chess alphabet, equally adapted to those who have not yet learned to read on the chequered page, as well as to those who know their chess letters, and a few of their combinations. Many persons who have attained among their friends a reputation for skill at chess, may think our easy lessons beneath their notice; but if they have not already acquired from books, or from the instructions of a good player, or from experience at play, the various methods of opening and conducting their game, they will find many things new and valuable to them, after we have given the first few preliminary lessons intended for the beginner only. As we advance further we hope to furnish many hints and illustrations calculated to assist the progress of chess students in general.

Our instruction will be rendered most familiar by addressing the reader in the second person, and by supposing him always to play with the *white* pieces; advising him nevertheless to accustom himself to the use of either colour; for which purpose he will do well to play over our lessons with the white and black pieces alternately.

LESSON I.

THE game of chess is played by two persons upon a chequered board of sixty-four squares. Each player is furnished with eight pieces, namely, King, Queen, two Rooks, two Knights, and two Bishops; and eight pawns. The pieces and pawns of the two players are distinguished by being of opposite colours, and will be represented in the course of these lessons as follows:—

The king and queen are supported each by three officers and four soldiers; but before you inquire into the powers of the various members of this little army you must become acquainted with the field of battle, and learn how to marshal your forces in proper order. The chess board must be so placed, that each player's right-hand corner square may be white. The only reason for this is, to establish a universal rule whereby to set up the pieces. Indeed, it is not necessary that one half of the squares of the chess board be of a different colour to the other half; but that the arrangement greatly facilitates the play. Remember that the rows of squares running upwards are called *files*, while those from left to right are termed *ranks;* the oblique rows of squares, either white or black, are called *diagonals.*

We will now set up the men in the proper order for commencing the game. Your right-hand corner square is white, place a rook on it, and remember that this piece being on the king's side is called the king's rook, and the square on which it stands the king's rook's square. Next to this place a knight, then a bishop, and on the fourth square from the right the king must be placed. You thus see that the king's officers stand on his right on their respective squares; the king's knight on the king's knight's square, and the king's bishop on the king's bishop's square. On the square next to the king place the queen, and observe that she will occupy a white square, while the queen of your antagonist will stand on a black square. Beginners are frequently at a loss to remember the squares occupied by the two royal pieces; but if you bear in mind the simple law that *the queen stands on her own colour* you cannot err. One consequence of this arrangement is, that your queen is to the left of your king; but if you turn round the board in order to play the black pieces your queen will then be to the right of your king This circumstance is very puzzling to beginners who study from books, in which advice is generally given to the player of the white pieces; for when they have to play the black men they get confused. This is why we have advised you to accustom yourself to the use of either colour; besides it is very likely that two persons who agree to play may have a equal liking for white, but as one of the two must have black, you see how necessary it is to make it a matter of indifference which colour you use. Good players always draw lots for colour.

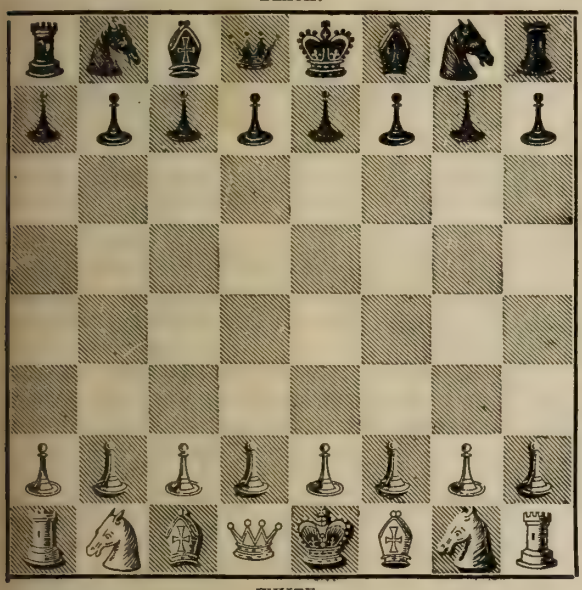
But we must finish setting up our pieces. A bishop attends the queen on her left hand; then comes a knight, and on the left corner square stands the queen's rook. Eight pawns stand immediately in front of the

pieces, and have the following names, beginning from the right.

King's rook's pawn
King's knight's pawn
King's bishop's pawn
King's pawn
Queen's pawn
Queen's bishop's pawn
Queen's knight's pawn
Queen's rook's pawn.

When you have finished setting up your pieces, compare the state of your board with the following arrangement, which shows the proper position of all the pieces and pawns on both sids at the commencement of the game.

BLACK.



WHITE.

The *rank* which the pieces occupy is sometimes called the *royal line*, and the eight squares which compose it are called by the names of the pieces occupying them at the commencement of the game: such as king's square. *i.e.*, the square whereon the king is first placed, and the square retains this name, throughout the whole of the game, whether the king occupies it or not. The same remark applies to all the other squares of the royal line.

The *files* are also named according to the pieces occupying the first square in each file. Thus king's rook's square is the first of the king's rook's file: king's rook's pawn occupies the king's rook's second square. King's rook's third, fourth, fifth, and sixth squares are unoccupied; king's rook's seventh is your adversary's king's rook's second square, and is occupied by his king's rook's pawn. Your king's rook's eighth square is your adversary's king's rook's square where that piece is now *at home*, as it is sometimes called when the piece has not been moved, or having been moved, is played back to *its square*.

Thus, all the files are named, and this easy method gives a name to every one of the sixty-four squares, and is equally available for your antagonist as well as for yourself.

We will now give you a few exercises on the names of the squares and the pieces. Remove all your white pawns from the board, and all your adversary's pieces, and then:—

1. Place your king's bishop on your king's rook's third square.

But as we shall hereafter have to give you many directions for playing a piece from one square to another, it will be desirable to write our instructions in the shortest possible manner; we shall, therefore, use that kind of chess notation which is now very common and very convenient. The exercise just given would be intelligible to any chess player if simply writen thus:—

K. B. to K. R. 3rd.

2. Play your queen to her eighth square:

Q. to Q. 8th, or
Q. to adv. Q.,

i.e., queen to adversary's queen's square.

3. Play your queen's knight to your queen's bishop's third square:

Q. Kt. to Q. B. 3rd.

4. Play your king to his bishop's second square:

K. to K. B. 2nd.

5. Place your king's bishop on your queen's rook's sixth square.

K. B. to Q. R. 6th.

6. Place your queen on the king's knight's fourth square:

Q. to K. Kt. 4th.

We will now finish our first lesson. Although you do not yet know the moves of the pieces, yet you are quite competent to perform the exercises given above.

AN IMPROVED METHOD OF SOLDERING METALS.

II.

One great advantage to the public at large to be derived from the general introduction of "autogenous soldering," will be the diminution of the number of cases of the escape of water and gas, which every day occasion so much inconvenience and even danger as regards the stability of buildings, the maintenance of the public thoroughfares, and the security of life.

The disuse of charcoal and tin by plumbers will have the important effect of rendering their trade less unhealthy, the fumes from their brasiers, and the arsenical vapours emanating from impure tin, being a very common cause of serious maladies.

By the old method of soldering, there is great danger of setting fire to houses and public buildings; the destruction of the corn market of Paris, and of the cathedrals of Chartres and of Bruges by fire, was partly owing to the negligence of plumbers; a negligence for which there could be no reason if the new method of soldering had been introduced, since it is only necessary to turn a cock in order to extinguish or re-kindle at any moment the jet of gas which serves for the plumber's tool. By means of the new apparatus, a soldering flame can be conducted to a distance of several fathoms without the dangerous necessity of lighting a brazier to heat irons, to melt masses of solder, and to carry the whole into the midst of complicated carpentry work.

The disuse of solder will also greatly reduce the price of plumber's work, without, however, diminishing the demand for the services of the workmen. The disuse of seams or overlappings, which from this new mode of connecting lengths of lead will almost entirely be given up, will alone occasion a considerable saving in the quantity of lead employed. The ease with which lead of from one-thirtieth to one-tenth of an inch in thickness may be soldered, and defects repaired, will permit of the substitution of this, in many cases, for thicker lead, and thus diminish the expense; perhaps also it will give rise to the use of lead for purposes to which it has not yet been applied, or the return to others, in which from motives of economy it has been superseded by other metals.

The plumber will also be indebted to M. de Richemont's method for several important improvements. He will be able in future to make internal joints wherever a jet of flame can be introduced and directed; to reconstruct on the spot, of pure lead, any portion of a

pipe, a vase, or a statue that may have been removed or destroyed; to execute in rapid succession any number of solderings; to repair in a few minutes all dents, cracks, and flaws in sheets, or pipes of new lead; to remove entirely the enormous edges or knots left by the old-fashioned joints, and that without weakening them; to give, in short, to works of lead a precision of execution, and a solidity, unattainable up to this time.

Autogenous soldering will also be of great assistance to several chemical manufactures, where it is so important to have large vessels of lead without alloy. By uniting a number of sheets into one, vessels of pure lead of any size may be formed for the process of acidification and concentration of saline solutions; for the formation of scouring vats employed by so many artisans who work metals; for vessels of every kind used to contain liquids which act upon tin solder.

In the repair of leaden vessels exposed to the action of heat, peculiar advantages are offered by autogenous soldering. By the old method the holes which are so often caused in the bottoms of these vessels, either by the action of sudden flames, or by deposits that form on their surface, can be stopped only, when they are not of too large dimensions, by making what are called weldings of pure lead. The cases in which this mode of repair is available, are very limited, and whenever it is impracticable the boilers must be taken down, the lead changed, and then re-set; thus occasioning considerable expense and an interruption to business. By the new method nothing is easier than to apply pieces to the bottom or sides of the vessels, whatever be the size of the holes, and thus the whole of a boiler may be renewed piecemeal. By this plan, too, the old lead remains uncontaminated with solder, and consequently will yield a pure metal to the melting-pot.

The great ductility of lead, which, in many cases, is one of its most valuable qualities, is, however, an inconvenience when instruments or utensils are required of considerable strength. At the same time there are circumstances where this metal alone can be employed, on account of the manner in which it resists chemical action. By constructing vessels or instruments of iron, zinc, or wood, and covering them with lead, utensils can be formed that will resist pressure and blows, and most chemical agents, as well as if they were made of solid lead. Such vessels are required in the preparation of soda, and other gaseous waters; in the distillation or evaporation of acid or alkaline solutions, and for many other purposes.

Another application that deserves especial notice is that of lining common barrels with thin sheet-lead. These vessels would be of great utility in chemical factories, more particularly in the construction of Woulf's apparatus, and other pneumatic instruments, to which greater dimensions could be given by this means; but they could be employed with singular advantage in the transport of acid and alkaline liquids by sea and land. Sulphuric and muriatic acids are transported in stone bottles, or glass carboys placed in baskets, which, however carefully packed, are liable to be broken, not only with the loss of the acids, but with danger to surrounding bodies. We are told of two French ships that perished at sea on a voyage to the colonies, in consequence of the breaking of some bottles of sulphuric acid.

In the manufacture of sulphuric acid the use of ordinary solder is impracticable, since it would soon be corroded. The following method was introduced some years ago for forming sulphuric acid chambers, and the concentration pans. Two edges of lead being placed in contact, were flattened down into a long wooden groove, and secured in their situation by a few brass pins driven into the wood. The surfaces were next brightened by a triangular scraper, rubbed over with candle-grease, and then covered with a stream of hot melted lead. The riband of lead thus applied, was finally equalized by being brought into partial fusion with the plumber's conical iron heated to redness; the contact of air being prevented by sprinkling rosin over the surface. The autogenous soldering apparatus will greatly simplify the above method.

The advantages to be derived from the new process are by no means confined to lead: the apparatus may be employed in using for solder either the common alloys, or pure lead, to unite zinc, and iron, and lead, with iron, copper, and zinc. It may be substituted also with advantage for the common blow-pipe and lamp of the enameller in all their applications to the soldering and joining performed by the aid of these instruments by jewellers, goldsmiths, tinmen, manufacturers of plated goods, of buttons, &c.

The flame produced by the combustion of the gas may be most economically employed for heating soldering irons. A few seconds suffice to bring the iron to the desired temperature, and it can be kept at that temperature for many hours without being liable to burn, nothing more being necessary than to regulate the flame by means of cocks, and the workman need not be obliged to change his iron, or even to leave it for a single moment. Hence there is not only a considerable saving in manual labour, but also in fuel, which in most cases, is of greater consequence.

Such are a few only of the advantages of this simple and beautiful invention, which is now very extensively adopted in France, and will doubtless get into extensive use in this country, when its merits are more generally known.

Since the publication of our former article on this subject we have been informed, that previously to the year 1833, a Mr. Mallet had employed an apparatus constructed on the same principle, and used in a similar manner, as that already described as the invention of M. de Richemont. Our correspondent quotes the following passage from LOUDON'S *Encyclopædia of Cottage Architecture*, published in 1833:—

Mr. Daniel, of King's College, London, has since published the same thing as new, and of his invention; however, I can establish priority by my laboratory journal.

Our correspondent, in consequence of having seen this account, pointed out the method to two mechanics employed by him. "I should think, therefore," he says, "that neither is M. de Richemont entitled to the credit of the invention, nor the patent good, in this country at least: although it may be perfectly possible that he invented it without being aware of its having been not only previously known, but even employed, in this country."

THE soul's dark cottage, battered and decayed,
Lets in new lights, through chinks which time has made.
WALLER.

LINES WRITTEN BY LORD MELCOMBE TO DR. YOUNG, NOT LONG BEFORE HIS LORDSHIP'S DEATH.

KIND companion of my youth,
Loved for genius, worth, and truth,
Take what friendship can impart,
Tribute of a feeling heart,
Take the Muse's latest spark,
Ere we drop into the dark.
He who parts and virtue gave,
Bade thee look beyond the grave.
Genius soars, and virtue guides
Where the love of God presides.
There is a gulf 'twixt us and God;
Let the gloomy gulf be trod:
Why stand shivering on the shore,
Why not boldly venture o'er?
Where unerring virtue guides,
Let us brave the winds and tides;
Safe, through seas of doubt and fears,
Rides the bark which virtue steers.

SKETCHES OF IRISH MANNERS AND CUSTOMS.

IV.

The indifference to their own interests in some of these Patlanders is very curious: in general, their anxiety for their money is quite tormenting, as they cannot give twopence of change, and we are obliged to keep small change and copper as if we had a shop; but sometimes the national indolence is too strong for the national poverty. One of our many butchers, dwelling in the glens, clad in fragments, but with one of the best faces I have seen in the country, frank, cheerful, honest and intelligent, and very well featured, sent us by his wife half a sheep we had ordered, but not the bill, which was also ordered: so I went to speak to the woman about it,—a short, fat, rosy lump of a woman, and looking as good-humoured as she was fat. "Why have you not brought the bill?" "Faith then I was too lazy; if the man had been in, it may be I'd have brought it." "You must bring the bill and half a sheep on Friday without fail." "Well, I cannot say; may be the man will be up the mountain, and it may not be convenient to me." "But indeed it must be convenient to you; your husband will not be up the mountain the next four days; tell him to make it out the first time he comes home, and do you bring it on Friday." She looked very doubtfully, so I said, "If you do not bring the bill weekly as I desire, I really will not take your mutton; so you must take your choice." "Well, I suppose I must try if I can bring it," and so she departed, got half up the drive to the road, and came back to ask, if my honor would be plased to buy a pennyworth of eggs, which she had brought four or five miles.

The accounts we read of the kindness of the Irish poor to each other are quite correct. I have just seen a strong instance. Having visited a sick man in his little bed-room, I went back to the kitchen to give the wife some further directions; there were several women helping or hindering as might be, and in the corner, on the ground, something dark which I supposed to be a sack till it rustled. I suppose I looked surprised, for the wife immediately told me that it was "a poor body quite simple and innocent, just come in to rest a little." I found they had let her sleep there the night before, though the man was very seriously ill, and had given her breakfast. She then went away, and in the evening she went to the next cottage, and told the woman she was come to her for her supper; the people at the first cottage had been so kind to her, that she did not like to go to them; she got her supper at once, though the woman had a very large young family, and then she went to her first friends to beg a rest on the floor where I saw her; at night the wife wished to send her away, the man being so ill, but he would not allow it, and the poor creature talked the whole night, which did him no good. She had been a schoolmistress, and showed a politeness and good breeding, of which the cottagers were very sensible. How she lost her senses, they could not make out, but she fancied herself an engineer of the tides, and that the government were defrauding her of her pay. Some calico was given to her, and the kind cottagers pressed her to stay and cut the things out; but she went away no one knew where, and returned in a day or two to show her work, and take up her quarters again with her good friends, when I again saw her eating oat cake. Her being "quite simple and so polite," seemed to make a great impression upon them; indeed I could not for some time make out that she was not in her right mind.

I think the Irish cottagers are more alive to manner than the same class are in England, and their own manners are much better: in the children, the difference is marvellous. Ask an English child a question, it stares, pouts, cries, runs away, but never thinks of answering; ask an Irish child of the same age the same question, it will look steadily at you with a clear bright eye, and give a distinct answer in a moment.

Instead of the dogged looks of our country people, there is generally a very pleasant, cheerful expression of countenance, and a kindly manner, and a consideration for the comfort of strangers that surprised me very much at first. There was a very bad bit of road between us and the town, newly made and laid with horrid little stones as sharp as saws. I certainly could not help looking out for a smooth place that would hold half a foot; though rather ashamed of appearing to mind with my strong shoes, what so many bare feet were paddling upon; but the people saw that it was uneasy to me, and every day several kind voices said as I passed, "Coorse walking for ye, Mem," upon which, if I liked the face of the speaker, began a little chat; their readiness to speak without presumption pleases me very much.

There is a neat little old woman of 104, who walks from the town, a long hilly half a mile, very often, for a little help. She and the master are great friends, and as he had given her money to buy a shift, at her particular request, she came up to thank him, and afford him ocular demonstration that she was wearing it, and was quite surprised at his walking off, and at the horror of the English servants. Sometimes her visits are too frequent, and she gets a denial which she does not like, and still worse, she was passed without notice on the road quite inadvertently. Soon after she saw us coming, and began, "Here comes the amiable and honourable Mr. E.; you passed by me the other day and never spoke to me," &c., and regularly scolded him for his neglect, but allowed herself to be chatted and laughed into good humour.

Every one has heard of the strange manner in which the Irish return thanks. A man employed on some small job for us, was I fancy rewarded rather beyond his expectations, for he exclaimed, "Thank ye, offisher, may your purse never be light, and may your life be long." We found this man one day making a gutter all round his cabin, and paving it with the large smooth stones of the shore, as neatly as possible; he seemed to enjoy the idea of making the house so dry, and was pleased at our admiring his work, and praising his industry.

They have generally a strange indifference to the way in which they finish their work. A man was desired to put a moveable handle to a cast-iron plate; he let the plate fall and broke it, and was obliged to screw on the handle most clumsily. When he was rebuked for his carelessness, he maintained that he "had done no harm; the plate was just the same, barring the disfigurement." Another man finishing an expensive job, was asked if he was sure it would answer well; "It will do well enough," said he, "but there will be a bother:" and bother there surely was.

The phrases "How do you do?" or "Good morning," seem quite unknown; the invariable salutation of the lower orders, amongst themselves, and to their superiors, is, "A fine day;" which means, anything not desperately bad: "A soft day;" which is anything from a mist to a perfect pour of rain: or "A coorse day;" which ranges from a breeze to a hurricane. I have never yet heard an Irish man or woman, who did not begin their talk with one of these sentences, and I have taken some pains to try if I could get any reply to my Good morning or evening, besides one of these everlasting remarks. I do not think I have heard Yes, or No, direct, since I have been in the country; and what sounds strange, is that their idiom gives an impression of greater accuracy and decision. Will it rain to day? It will not. Did you go to the shoemaker? I did. Does this water boil? It does. Has the mail passed? It has: and so on through everything.

I am daily struck with the imperfect idea that the very best of our writers nave given of the brogue; the

last of the last syllable of most of their words is so sunk, that to give a notion of it in writing it should be represented by an apostrophe: as for children it is childr', not at all childer, as is often written; nor even childre, as we sometimes see, but quite shortened to the *r*. Blayntyre, Blaynt'; potatoes, prat's; stockings, stock's.

They speak much faster than our people, and much better. I am frequently astonished at the pithy fluency and variety of their expressions: they like talking to their superiors if they meet a kind manner, and begin to talk in a way that would be impertinent in England, but which the simplicity and heartiness of their manner makes very agreeable. Our servant, whilst waiting at dinner, will frequently begin giving his thoughts upon the most advantageous manner of laying out our garden, or the best mode of bargaining for potatoes, or hay, or oats; showing that he has been occupied about our interests, and so sometimes there is a long dialogue which with us could not be endured, but here it is done in such a way that it would be the height of pride and ill nature to check the old man.

Sometimes, if they want a little money in a hurry, they set about selling some of their property in a very odd way. A rosy, well-featured woman, with lively intelligent eyes, and teeth and cap as white as snow, pounced upon me at our own gate the other day, with "May I be spaking to ye, Mem?" and proceeded to enquire, should I be buying geese? for she had fine ones to sell,—"that is, not me, but the brother in law of me; he was wanting a thrifle to make up the rint at onst; and the wife is just gone, and so he thought to sell the geese; had she lived she would not have parted them, but she deceased, an' if ye choose to lave the geese a few days for the benefit of the stubble, ye can have them when ye will; and I'd give ye security for them:—there's James M'Alister, do ye know him?" "No." "May be ye'd know Aleck Kenne?" "Yes." "Well, he'll be security that the geese will be safe, though indeed, no dacent body would be selling fowl and denying them." "What colour are they?" "Well, they'll just be grey, some, and white:" (laughing, as if she thought the question very simple). "I ask because the all-grey, or the all-white, are much better than the parti-coloured." "Are they? Well, there's many that rears them and sells them, and knows no more about them; the quality knows best for that, but it's all God's will; He gives to some, and not to others; we must just all be thankful." She took great pains to explain where we were to send to see the geese, and the shortest and best way; but to be sure it was intricate enough. The Irish names of the towns I vainly endeavoured to pronounce; she repeated and repeated, and at last, in a little pet, she gave the English names, and the meaning, and said, "Sure it was as asy to say one as the other;" and then she apologised for her gibberish which to be sure must trouble us to understand, but she could not help it. The gentlemen she said was great for the divarsion, and he had an Irish tongue too, but she could hear that I was an English lady. She had fifteen acres of good land, and was content, the brother-in-law had forty-five acres of bad land, and she thought her own bargain much the best. We parted, agreeing to pay for the geese the next day, and have them home in a fortnight. I hope the foxes will not make a feast upon any of them. Foxes are so abundant in the glens that they are killed at half a crown a head,—a proceeding which, being accustomed to fox-hunting counties, appeared to me quite outrageous.

"The towns" mean but the cottage: it cannot apply distinctly to cottages built upon one particular townland, because in a little circle of half a mile there will be twenty cottages quite detached, or some two or three clustered together, as may be; but each single cottage, as well as each cluster, is a town, and they speak indifferently of "my town," or "my place." They have a queer custom of generally standing in their carts as they drive along, and a still queerer of calling it sailing; and Jack M'Aulay's history of a fall he had as he was sailing along, by which there was a contact between his hard head and the hard stones, in which his head was cracked entirely, would have been worthy of Mathews. The practice is so common, that seeing a cart building, and making some observation on its structure, the man, who was a very decent, nice-looking person, told us "it was intended just for sailing."—I was amused one day with seeing a man sailing along just on the front bar of a very small cart, in which were nine children, who sat, stood, scrambled, chattered, screamed, and fought, in the most restless confusion, and with the greatest danger of falling overboard. The man pursuing his way wholly regardless of the clamour and pranks of his crew, which were so very absurd that we laughed heartily; though we expected an accident every moment, they passed safely out of sight, and I suppose had any mischief occurred, we should have heard of it.

A gentleman of our acquaintance bought a horse from one of the small farmers in the neighbourhood, and we asked the man what Mr. ——— had bought the horse for, as he was so very small; "Oh, he's just bought him for the servant to ride after the ladies when they go out sailing in a fine summer evening;"—when, as the gentleman's residence was close to the sea, and we were not then aware what sailing *Hibernicè* meant, we were greatly astonished at the services man and horse were to perform.

In all ages and all countries, man, through the disposition he inherits from our first parents, is more desirous of a *quiet* and approving, than of a vigilant and tender conscience; desirous of *security* instead of *safety;* studious to escape the *thought* of spiritual danger more than the danger itself; and to induce, at any price, some one to assure him confidently that he is safe, to prophesy unto him smooth things, "and to speak peace, even when there is no peace."—Archbishop Whately.

THE EFFECTS OF POLITICAL CONTROVERSY.

There are pursuits in life, high in their character and eminently useful, which nevertheless have something in them that almost inevitably tends to take from the human disposition that amiableness of temper which is so essential to happiness. Prominent among these pursuits is that of politics. Whether a man be an actor in the political affairs of his country, or merely an attentive looker-on and a commentator, there is so much of misrepresentation, so much of effrontery, so much of injustice in all its forms, to be remarked upon, to be excused, or to be resented, that, in a man of quick sensibility, a bitter indifference or a passionate partisanship is almost sure to be the result. Both of these are unfavourable to virtue and happiness, and the first is the worse of the two. Time may wear out a man's passion and violence, and he may subside into philosophy; but he who acquires a habit of bitter contempt for the conduct of men, even in their most important concerns, and who thus despairs of any permanent triumph of justice or establishment of good, is likely to go to his grave a sneerer and a misanthrope. If indeed he be of a retiring and meditative disposition, this hopeless view of human affairs may resolve itself into mere melancholy and pity; but this will not be the result with such as continue to belong to active life. Every day will afford them fresh evidence of folly and fresh food for contempt; and they go upon their way with a bitter smile upon their lips, while cold scorn sits triumphant upon their hardened hearts.—*The Table Talker.*

LONDON:
JOHN WILLIAM PARKER, WEST STRAND.
Published in Weekly Numbers, price One Penny, and in Monthly Parts, price Sixpence.
Sold by all Booksellers and Newsvenders in the Kingdom.

THE

Saturday Magazine.

No. 622. MARCH 12TH, 1842. { PRICE ONE PENNY.

COGGESHALL ABBEY, ESSEX.

COGGESHALL is a market town, partly situated on low ground near the north side of the river Blackwater, in Essex, and partly on the acclivity of a pleasant hill rising on the same side. On this latter account it is supposed to have been named in Saxon *Loggerhall*, *i. e.*, Sunny Bank, and in the old deeds, *Sunnendon*. It is forty-four miles from London and ten from Colchester.

According to one authority Coggeshall owes its existence to the abbey, whose foundation attracted towards it a number of dependants and inhabitants: but some antiquaries suppose it to have been of Roman origin, and, Mr. Drake argues strongly in favour of its being the *Canonium* of Antoninus. Its distance, he observes, exactly answers to the numbers of the Itinerary, which places Canonium between Camulodunum and Cæsaromagus: the latter he supposes to be Dunmow, from which a military way runs in a direct line to Colchester. The opinion that Coggeshall is identical with the station Canonium, he endeavours to corroborate by mentioning some Roman coins and other antiquities, that have been found in this vicinity. Among the latter was an "arched vault of bricke, and therein a burning lampe of glasse, covered with a Roman tyle some fourteen inches square, and one urn with ashes and bones; besides two sacrificing dishes of polished red earth, having the bottom of one of them with faire Roman letters, inscribed COCCILI M." This inscription is supposed by Mr. Burton to be intended for "Coccili Manibus;" *i. e.*, to the Manes of Coccilus. Others affirm it to be only a potter's mark found on many vessels that have been dug up in England and elsewhere. In a place called Westfield, belonging to the abbey, and situated about three-quarters of a mile from Coggeshall, was also found, says Weever, "by touching with a plough, a great brazen pot. The ploughman supposing it to have been hid treasure, sent for the abbot to see it taken up. The mouth of the pot was closed with a white substance like paste or clay, as hard as burnt brick; and when that was removed, another pot inclosed a third, which would hold about a gallon; and this was covered with a velvet-like substance, fastened with a silken lace; within this were found whole bones, and many pieces of small bones, wrapped up in fine silk of fresh colour, which the abbot took for the relics of some saint, and laid up in his vestiary; but it was more probably a Roman urn." This and the former discovery seem certainly insufficient to prove that Coggeshall is the actual site of a Roman station; although some think they afford evidence of its having been a Roman villa.

In the reign of Edward the Confessor this lordship belonged to Colo, a Saxon; but at the time of the Domesday survey it was held by Eustace, earl of Boulogne, whose heiress, Maud, conveyed it to the crown by her marriage with Stephen, earl of Blois, afterwards king of England. In the year 1142 Stephen and his queen founded an abbey here, near the river, for Cistercian or white monks; and having dedicated it to the Virgin Mary, endowed it with this and other manors. In 1203 King John granted the abbot and his convent permission to inclose and impark their wood at Cogges-

hall; and in 1247 they obtained a license from King Henry the Third to inclose and impark extensive woodlands in Tolleshunt, Inworth, and other places: the king also invested them with the privileges of holding a market weekly, and an eight days' annual fair. This monastery was largely endowed by succeeding benefactors; and a chantry was founded in the church to pray daily for King Edward the Third, Philippa his queen, and their children; for which the sovereign, on the 11th of January, 1344, made them a grant of a hogshead of red wine, to be delivered in London by the king's gentlemen of the wine-cellar, every year at Easter. A second chantry was founded here in 1407, by Joan de Bohun, countess of Hereford, and others, who bestowed some valuable estates upon the monks for its support. On the surrender of the abbey, 5th of February, 1538, its annual revenues were, according to Speed, valued at 298*l.* 8*s.* In the same year Henry the Eighth granted the manor of Coggeshall and other estates to Sir Thomas Seymour, brother of Edward, duke of Somerset, who in 1541 exchanged them with the king. Since that period this manor has been divided, and passed through various families. Only a small part of the abbey is now remaining; near it is a bridge of three arches, originally built by King Stephen, over a channel that was cut to convey the water of the river nearer to the abbey.

ANECDOTE OF AN AMERICAN INDIAN.

A FEW years ago, a Pawnee warrior, son of "*Old Knife*," knowing that his tribe, according to their custom, were going to torture a Panduca woman whom they had taken in war, resolutely determined, at all hazards, to rescue her from so cruel a fate. The poor creature, far from her family and tribe, and surrounded only by the eager attitudes and anxious faces of her enemies, had been actually fastened to the stake, her funeral pile was about to be kindled, and every eye was mercilessly directed upon her, when the young chieftain, mounted on one horse, and according to the habit of his country leading another, was seen approaching the ceremony at full gallop. To the astonishment of every one, he rode straight up to the pile, extricated the victim from the stake, threw her on the loose horse, and then vaulting on the back of the other, he carried her off in triumph!

> She is won! we are gone,—over bank, bush, and scaur:
> "They'll have fleet steeds that follow," quoth young Lochinvar.

The deed, however, was so sudden and unexpected, and being mysterious, it was at the moment so generally considered as nothing less than the act of the Great Spirit, that no efforts were made to resist it, and the captive, after three days' travelling, was thus safely transported to her nation, and to her friends. On the return of her liberator to his own people, no censure was passed upon his extraordinary conduct—it was allowed to pass unnoticed.

On the publication of this glorious love-story at Washington, the boarding-school girls of Miss White's seminary were so sensibly touched by it, that they very prettily subscribed to purchase a silver medal, bearing a suitable inscription, which they presented to the young Red-skin as a token of the admiration of *White-skins* at the chivalrous act he had performed, in having rescued one of their sex from so unnatural a fate. Their address closed as follows:—

"Brother! accept this token of our esteem; always wear it for our sakes: and when again you have the power to save a poor woman from death, think of this, and of us, and fly to her relief."

The young Pawnee had been unconscious of his merit, but he was not ungrateful. "Brothers and sisters!" he exclaimed, extending towards them the medal which had been hanging on his naked breast, "this will give me ease more than I ever had, and I will listen more than I ever did to white men.

"I am glad that my brothers and sisters have heard of the good act I have done. My brothers and sisters think that I did it in ignorance; but I now know what I have done.

"I did it in ignorance, and did not know that I did good; but by giving me this medal I KNOW IT!"—*Quarterly Review.*

THE BRANDY PEST.

No. IV.

The Visit.

WE had listened to Justine's narration with deep emotion; we all surrounded the good child, pressed her in our arms, and tried to comfort her by the assurance of our love. Justine was right; if her father had been able to foresee the consequences of his habit of drinking spirits, he would certainly have shunned the snare. And how many people are still living, who, with the brandy-glass in their hand, smile carelessly at the slowly-approaching ruin of their body, of their mind, and of their whole family.

I consulted my wife, and we determined to take care of Justine, whatever might happen. We could easily perceive that her heart was still attached to the playmate of her youth, although without hope. But the question was whether Fridolin Walter was still thinking of the poor deserted Justine, or whether he was already married, and whether he still lived in his native home, or had returned to England? Nay, we did not even know whether he was still alive. I repented having neglected my correspondence with him, and I resolved to undertake a journey in order to see him, and to ascertain his circumstances. Justine was not to be informed of what I was about to do. I seated myself in my carriage, and left home, and the next day reached the native village of Fridolin and Justine.

It was a fine summer's evening, and the people were still working in the fields. I left the carriage at a little distance from the village, and walked thither on foot, in order to satisfy my impatient curiosity by inquiry. I met a ragged peasant, who stood leaning on a dung-fork, staring idly about him. Upon my inquiring whether Dr. Walter still lived in the village, the pale-faced fellow looked at me stupidly for a while, repeated my question slowly, and added, "Yes, sir, the devil has not yet carried away the people-flayer." I was somewhat shocked at this answer, and continued my questions; but I got nothing but still more confused, and less agreeable news of the doctor. I was extremely sorry for it. How could Fridolin possibly have changed in so few years? and yet I had often seen similar changes in mankind. Poor Justine! thought I. I went on, and on the way joined an old woman, with a basket on her head. At the repetition of my question about Fridolin, she said, "You mean our mayor? Certainly, he is at home."

"Is he your mayor? Is he liked by the people?"

"To be sure," replied the old woman, "he is a very worthy and a wise man, and has done a great deal of good to our village."

This encouraged me again. I learned now from my talkative companion that Dr. Walter lived in the house of his mother, that he was unmarried, that he possessed a large fortune, that he assisted many poor families, that he was a true friend to the widow and the orphan, and that he therefore enjoyed the universal esteem of the neighbourhood, and had been chosen member of the Great Council of the Canton; but that he refused the office, because he would not be separated from his patients. At the entrance of the village she showed me one of the most beautiful houses on the right hand side of the road, in the midst of a garden, and said it was the mayor's house. I entered without ceremony.

An old lady, distinguished by manners full of dignity, received me in the hall: she was Fridolin's mother. She conducted me to her son, who was sitting at his writing-desk, but came towards me, and soon recognised me. He received me cordially. I allowed him to suppose that I had availed myself of a journey on business to renew our old acquaintance; and both he and his mother insisted upon my spending a few days with them. My luggage was then fetched from the inn.

Fridolin was still the same hale, vigorous man; but melancholy was not yet quite banished from his features. "I divert myself as well as I can," said he, "and I have opportunity enough to do so, for I have plenty of occupation."

"And Justine?" asked I.

He shrugged his shoulders; but said quietly, in an almost indifferent tone, "I know not where she may be. She took too much to heart the death of her father, who, after having deceived widows and orphans, as well as his best friends, committed suicide. Not half his debts could be paid out of the money he left behind him, so the house and ground were sold; but the accursed house was soon afterwards destroyed by fire. All my inquiries, all the

advertisements in the newspapers, were in vain. I heard, but too late, uncertain news that a young lady was seen, about the time of Justine's departure, travelling towards the Lake of Constance; but there every further trace was lost. I would certainly have assisted the poor girl in her despair."

"Often there happens what we do not dare to hope for!" said I. "Perhaps a lucky chance may discover to us the place of her retreat. In the mean time, dear doctor, I am delighted to find you in better spirits than you were at our first meeting. You must own that time is a good doctor. Your mother, too, appears consoled, and even more cheerful than yourself."

"Yes," said Fridolin, "but on my arrival, I found her dangerously ill in bed, and had every reason to fear I should lose her too. The sudden death of my father—he was found one morning dead in his bed, having been struck by apoplexy, and the discovery that he had been carried away so early from life by his own fault—he was only fifty years of age—all this had brought my mother to the brink of the grave."

I looked somewhat astonished at the doctor: "Apoplexy, and his own fault, you say? Dare I ask you what you mean by that?"

Fridolin answered, "Unfortunately he shared the common vice of our days. Do you remember our conversation during our journey?"

"I have not yet forgotten it," answered I, "for since then I have become a very moderate wine-drinker, but a very strong water-drinker, and I have taken leave of all spirits. Therefore, thanks to you, I am now well, and will endeavour to remain so."

"Oh, if my good father had done like you, he would still be living!" said Fridolin, with sad earnestness. And then he related to me the particulars of his father's fate.

Another Narration.

Fridolin's father, as the doctor said, had always been a respectable, honest man: he had always liked, it is true, a glass of good wine in good company; but not beyond measure. He was never seen drunk, but sometimes what we call "wine warm." He seldom took brandy or other strong liquors.

The honest man would perhaps have continued this manner of life a long time, though not with the best advantage to his health. A moderate use of wine at dinner refreshes and strengthens, if it is not used like water for quenching the thirst. But Fridolin's father shared the fate of many other people; they drink, and do not know when they have too much, and forget themselves. He was every day flushed with wine, so that, after a few years, his health was much affected. He became indisposed to work, his face became pale, his features heavy; he lost his former good humour, and complained of restless nights: he attributed this to his becoming older. Mrs. Walter thought it was the consequence of his labours, and the vexations united with them. She herself offered him sometimes an extra glass of wine, in order to refresh him. This was poison to him. He became more accustomed to it. He was in good humour as long as his blood and his nerves were excited by the wine; but afterwards he always sunk back into his former state of uneasiness.

"My mother became at last very nervous," said Fridolin, "as she feared he was ill, and caused the physician to be fetched. My father laughed. He was certainly not ill, if we take the word ill in its common meaning; but death was already stealing upon him. The physician prescribed to him to drink water. My mother watched anxiously the progress of the case. My father renounced wine, even in the evening parties, to please her; yet his health did not improve. He became rather more morose, more sleepy, and complained of headache, and heaviness in his limbs; he worked notwithstanding, and frequently took bodily exercise. One morning he died in an apoplectic fit. After his death, many empty brandy bottles were found in his buffet. He had drunk secretly, probably to procure for himself sleep at night. His death, however, proved to be the greatest blessing to this place, and some neighbouring villages."

"What!" cried I, astonished; "a blessing? how is this possible? you excite my curiosity."

Fridolin answered: "The suicide of old Thaly, and the death of my good father, which succeeded that event, being the effect of drinking, were a great warning for the people, who became really more moderate; and the example of our village soon produced a beneficial influence upon some other villages of the neighbourhood. We formed a Temperance Society, from which—"

"Stop!" cried I, interrupting him, "is this Society still in existence? This is most important for me to know, is it still in existence, or—"

"Certainly, it is still in existence," answered the doctor, "and has been fornearly two years. We have only about nine hundred inhabitants in this village, and eight hundred and sixty of them belong already to our Society."

"How is that?" asked I, laughing, "do your girls and women, and even your children, belong to your Temperance Society, that you count nearly the whole population?"

The doctor looked at me with amazement, and said, "Certainly: how is it possible to form such a Society,—how could it have a salutary influence,—without the women and children? The influence of the female sex upon men, in promoting a moderate, sober life, especially upon young people and children, is very great. It is they who suffer most by the drunkenness of men. They can save from ruin, if not always the grown-up persons, at least the rising generation."

I confess this appeared to me very strange, and I said, "How have you arranged this? Relate it to me. In my native town we have tried to establish such Temperance Societies, for brandy-drinking had also increased there; but we met with such great obstacles to it that we were obliged to give up the plan."

Fridolin was just going to answer me, when his mother entered, and invited us to supper, which, in the beautiful evening, was to be taken in the summer-house. We obeyed. The doctor said to me on the way, "To-morrow we shall find an hour in which we can be alone together: then I will satisfy your curiosity. You have probably begun upon *wrong principles* the establishment of a Temperance Society, as has happened in other places."

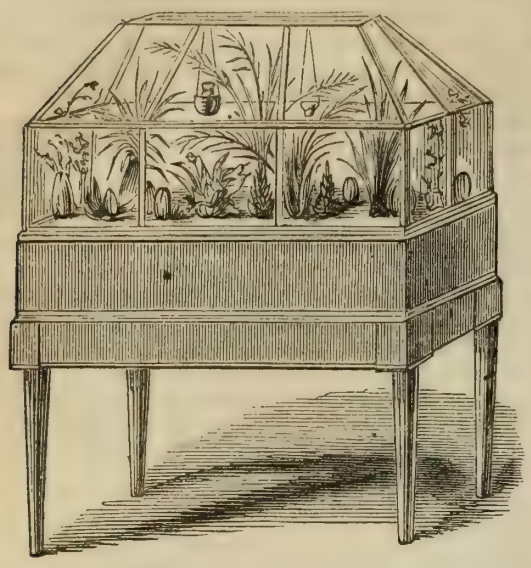
Indeed, during the whole evening, we could not find a single moment to continue our conversation. Mrs. Walter directed it to a hundred different subjects, and complained jokingly "that her son had left her in the beginning of her old age, without the friendly assistance of a young industrious daughter-in-law; and that he preferred, as it appeared, to remain a bachelor."

This was of course a chapter full of matter to talk about. I began by and bye to speak of the lovely Justine; but the icy tone in which Fridolin spoke of his former beloved one, and asked directly about other things, and the sudden silence of Mrs. Walter, whose features appeared to show to me that I had touched upon a not very pleasant subject, hindered me from proceeding. I was silent and somewhat confounded. I saw that great changes had occurred, and that the aim of my journey was not welcome. So I desisted and deferred until the morrow speaking about her to Fridolin. Oh, poor Justine!

However the world may affect to despise the genuine Christian, it is beyond their power; they feel too sensibly the necessity of attaining that very state of feeling and disposition which is displayed in such a character, to entertain in their heart any mean or degrading opinion of the character which they apparently undervalue. Every thought which it wrung from their conscience by its unwelcome intrusion upon their contemplation, rises in judgment against their indifference.—God has not permitted them to despise a true Christian; they may pass him by with a haughty and supercilious coldness: they may deride him with a taunting and sarcastic irony; but the spirit of the proudest man that ever lived will bend before the grandeur of a Christian's humility. You are at once awed, and you recoil upon your own conscience when you meet with one whose feelings are purified by the Gospel. The light of a Christian's soul, when it shines into the dark den of a worldly heart, startles and alarms the gloomy passions that are brooding within. Is this contempt? No: but all the virulence which is excited by the Christian graces can be resolved into envy, the feelings of devils when they think on the pure happiness of angels—and, to complete their confusion, what is at that moment the feeling in the Christian's heart? Pity most unfeigned pity!—Wolfe's *Remains*.

Directly a man determines to think he is well nigh sure of bettering his condition.

INDOOR GREENHOUSES.



It will probably be a new and interesting fact to many of our readers when we tell them that it is quite possible to enjoy the luxury of growing plants, in the most confined and apparently unfavourable situations, if we inclose them in glass cases or wide-mouthed bottles, and carefully exclude the atmospheric air.

This fact was accidentally discovered in the following manner. Mr. Ward, who made a report on the subject to the British Association, in 1837, had often attempted to grow plants, especially mosses and ferns, in and about his own dwelling, but being in the neighbourhood of manufactories, and enveloped in smoke, he found all his efforts unavailing, owing to the necessity which he supposed to exist for exposing his plants more or less freely to the air. But happening on one occasion to place the chrysalis of a sphynx, buried in loose mould, in a wide-mouthed bottle securely closed, that he might observe its change into the winged state, he was surprised, about a week before the insect assumed the perfect form, to find a seedling grass and fern springing out of the mould. He found that they required no water, for the condensation of water on the internal surface of the glass kept the mould always equally moist; and he was willing to try how far the change of air within the vessel, which must naturally result from every change of temperature, might be sufficient for the purposes of vegetable life. He placed the bottle outside his window, and had the pleasure of finding that the plants grew well. The success of this trial led to a series of experiments upon plants of all structures, and belonging to a great variety of natural families, in which Mr. Ward was greatly assisted by the kindness of Messrs. Loddiges.

These experiments were conducted upon a large scale. The glass cases in which the plants were inclosed were of all sizes and shapes, from small wide-mouthed bottles, to a range of houses, about twenty-five feet in length, and ten in height. The houses were filled with rock-work, for the purpose of accommodating plants which grow best in such situations. Some of these cases were quite closed at the bottom, and when once watered required no further watering for a long period: others had several openings, and the plants were watered once in three or four weeks or months, as they seemed to require. The latter was found the most advantageous method. The glazed roof and sides of these cases were made as tight as putty and paint could effect, and the doors were made to fit closely, but in no instance were any of the cases sealed hermetically, from the almost impossible nature of the task in these instances, and from a conviction on the part of Mr. Ward that if it were done it would prevent that alternate expansion and contraction of the air within, on which so much of the success of the experiment appeared to depend.

The result of other experiments made by Mr. Yates, one of the "Committee appointed for making experiments on the growth of plants under glass, and without free communication with the outward air," is also very interesting. In 1837 he thus writes:—

Nearly a year ago I planted *Lycopodium dentatum* in a chemical preparation-glass, with a ground stopper. During that time the bottle has never been opened. The Lycopodium continues perfectly healthy, and has grown very much, although for want of space the form of the plant is distorted. Seeds, which happened to be in the soil, have germinated, and *Marchantia* has grown of itself within the glass. I also obtained a hollow glass globe, of eighteen inches' diameter, and with an aperture sufficient to admit my hand for planting the specimens. A variety of ferns and lycopodiums were then set in the soil, which was properly moistened with water. This having been done, the aperture was covered with sheet India-rubber, which was every day forced, either outwards, as the air within the glass was heated and expanded, or inwards in the reverse circumstances. These ferns grew probably as well as they would have done in a greenhouse or hothouse. They were all foreign, and some of them requiring a great heat. Several have ripened seed.

Mr. Yates also mentions the erection of a greenhouse in the yard of the Mechanics' Institute, Mount-street, Liverpool, for the purpose of affording a specimen on an enlarged scale, to be exhibited at the meeting of the British Association in that city. It was stocked with foreign plants of all kinds, and was not provided with any means for the application of artificial heat. The plants flourished perfectly well, many of them flowered, and some ripened seed.

Another series of experiments was undertaken by Dr. Daubeny. During the month of April, 1837, he introduced a considerable number of living plants into glass globes, having only a single aperture through which the air could circulate, and that one covered over by a sound piece of bladder, closely attached to the edges of the glass, so as to preclude the possibility of any air entering the vessel, except through the membrane itself. The plants, which consisted of anemonies, primroses, lobelias, speedwell, &c., were allowed to remain undisturbed for ten days, at the end of which time they appeared healthy, and had grown considerably: some even had flowered since their introduction. The air contained in the jars was then examined during the day, and found to contain in the first jar 4 per cent. of oxygen more than the proportion present in atmospheric air; in the second jar 1½ per cent. more; in the third jar 2 per cent. more. The amount of oxygen was found to be on the decrease in successive examinations, and at length, on June 20th, of the same year, No. 1 was found to contain 2½ per cent. less of oxygen than that in atmospheric air; No. 2, 3½ less; No. 3, 4 per cent. less. Even then there was sufficient aerial circulation to sustain the vitality of the plants, though they were less vigorous and healthy.

Mr. Ward considers the change of air produced by alternate expansion and contraction, which is regulated by heat, as being exactly proportioned to the increased wants of plants grown in this manner, arising from their greater excitement. Vascular require a greater change of air than cellular plants, and this is effected by surrounding them with a larger volume. It is of great importance that light be freely admitted to all parts of the growing plant, for it is thus assisted in developing its flowers, and enduring cold.

The air in these cases is in a perfectly quiet condition, and therefore the plants will bear variations of temperature, which in ordinary circumstances would prove fatal to them. Australian and Cape plants are found to bear the cold of our climate in this way without injury, and some of the inhabitants of cold regions may, in the same manner, be reared in our sunny apartments, being sur-

rounded with a protecting atmosphere of their own creation. Mr. Ward gives a striking illustration of this ability in inclosed plants to bear changes of temperature. A case of plants, brought by Captain Mallard, from New Holland, was prepared in the month of February, at which time the thermometer stood 94° in the shade. In rounding Cape Horn, two months subsequently, the thermometer fell to 20°: a month after this, in the harbour at Rio, it rose again to 100°: in crossing the line, the thermometer attained 120°, and fell to 40° on their arrival in the British Channel in November, eight months after they were inclosed. These plants were taken out in the most healthy condition.

By means of the glass case we are able to surround our plants with an atmosphere of any required humidity, and thus we may now, in the heart of cities, have our drawing-room tables adorned with growing specimens of choice and beautiful flowers, or if we prefer it, with the lovely, though humble, denizens of our woods and forests.

ON THE PERCEPTION OF PAIN.

Unhealthy people depend far too much on the druggist's shop. This perhaps would not be, if it were recollected, as it ought to be, that the pain and disagreeableness of ill-health result from our perception of these things, and not from the things themselves. Those who go into battles know that in the heat of conflict men receive the most serious and painful wounds, which they do not so much as find out until the hurry and excitement of the fight are over. Now, one half of the ill-health which annoys people in the atmosphere of London, and with London habits, is just of that kind from the *perception* of which they might escape. I am no *doctor* in the pulse-feeling and tongue-inspecting signification of the word; but I have reason to believe that the most intelligent among my very esteemed friends who practise the healing art are very well aware of the great importance of turning away the *attention* of the patient from his or her malady, be it real or only imagined. Medical folks who understand mankind morally as well as physically, are, I believe, far less solicitous than some people think, to make out positively and certainly whether such or such a disease does really exist, or only the imagination of it. In the first place, (I speak, however, with the utmost deference to more erudite judgment,) it is in very many of the cases which come before medical men absolutely impossible to tell what is really the matter *physically*. Some diseases there are of which the symptoms are quite decisive, and not to be mistaken; but of by far the greater number of cases of ill-health, the physical cause must remain in considerable doubt. The chief good which we then derive from the doctor, is a moral good: we submit ourselves to authority and to discipline; we feel that we are taking rational steps towards ridding us of the evil which oppresses us; and we are, for the most part, inspired with hope, not to say confidence, by the sensible and encouraging words which the physician speaks.

But there are thousands upon thousands who do not think themselves quite ill enough to call in the doctor, and yet go on from week to week, from month to month, and from year to year, continually ailing, and continually sending to the elegant shop with plate-glass windows filled with glass jars of various coloured physic, (especially crimson,) as if sick people were as silly as mackerel, and very liable to be taken with the same colour of bait. Now it is for these people that I would presume to prescribe. What they want is not so much physic as diversion. How many are there who, while they are at home, moping about with dull companions, or no companions at all, feel pains in the shoulders and in the back and in the chest—have dizziness in the head—black things floating before the eyes—sudden startings and twinges, and so on; how many are there tormented thus, who, when some brisk and lively and intelligent friend appears, capable of rousing the attention and setting the spirits in a glow, actually forget their complaints, and feel that for that evening or morning, as the case may be, they are uncommonly well? Now these persons, instead of taking "black draught," as they very commonly do, (for the pretty colours in the druggist's front-window are by no means common to his nauseous stock,) should take some far less melancholy medicine. It should not be material physic, but a wholesome, cheerful philosophy.—*The Table Talker.*

HAS THE MOON ANY INFLUENCE ON PLANTS AND ANIMALS?

An inquiry whether the moon exerts any influence on organized beings is not less interesting than a similar investigation of her influence on the weather. Gardeners and agriculturists have a strong faith in the existence of such influence, and it is right that the tenability of the opinion should be gradually tested.

The gardeners in the neighbourhood of Paris apply the name of the "frosty moon" to the lunation, which, commencing in April, becomes full in the early part of May. They assert that the light of this moon exerts an unfavourable influence on the young shoots of plants; that, during a clear night, the leaves and buds exposed to this "frosty moon" become, in some measure, blighted by frost, although the temperature of the air may be many degrees above the freezing-point; and that if the night be cloudy, so that the moon's rays cannot reach the plants, the bad effect does not take place, although the temperature may be the same as before. Many of the scientific men of Paris have laughed at these notions, but Arago shows that they may not be altogether unreasonable. Dr. Wells, some years ago, demonstrated that, through the radiation of heat, a plant may be during the night many degrees colder than the surrounding air: if the sky be clear, this difference may amount to 10° or 12° Fahrenheit, but if cloudy, the difference becomes little or nothing. Now it is known that in the month of April and the beginning of May, the temperature at night is frequently only 6° or 8° above the freezing-point, and the plants may thus become frosty on the principle which produces dew and hoar-frost in other cases. Arago says that, by viewing the matter in this light we may agree with the Paris gardeners as to the fact, though the moon's action has nothing to do with it.

"Trees ought to be cut down during the wane of the moon, if we wish the wood to be of good quality and durable." This is a favourite maxim of foresters, and was formerly so strongly believed in France, that a law was passed to ensure attention to it in the royal forests. The same opinion prevails in many other countries. Sauer, a German agriculturist, after expressing his belief in the fact, explains it by saying that the *sap* rises in a plant more abundantly during the first than the second half of a lunation, and that consequently, if the tree be cut before full moon, the wood will be spongy, easily assailable by worms, slow in drying, and not durable. Arago remarks that, *if true*, nothing in science would be more remarkable than the increase of sap at a particular part of the moon's age. It does not appear that Sauer made any experiments to support his assertion, and he meets with but little support from other quarters, for M. Duhamel de Monceau cut down a great many trees of the same age, situated in the same field, and under precisely similar circumstances: on comparing the wood of these trees, he could not perceive that the trees cut down during the wane yielded wood differing in any respect whatever from those cut during the moon's increase.

Some gardeners maintain that if you wish to have cabbages and lettuces which will shoot; if you want double flowers, or trees which shall give early fruit, you must sow, plant, and cut during the increase of the moon. The only attempt at explanation which we have ever seen, in support of this fanciful opinion, is that of Montanari, who says:—"During the day the solar heat augments the quantity of sap which circulates in plants, by increasing the diameter of the tubes through which it flows. The cold of night produces an opposite effect. Now at the time of sun-set the moon, if not yet full, is above the horizon, and therefore lessens the cooling effect resulting from the disappearance of the sun. During the wane, on the contrary, the moon often does not rise till some hours after sun-set, that is, till the cool-

ing of the organs of the plants has produced its full effect." This explanation is full of objections, but it will suffice to say that a calculation on the *heating* effects of the moon's rays is quite inadmissible. These maxims appear quite as insupportable as that of Pliny, that we should sow beans at *full* moon, and lentils at *new* moon. No fair experiments have proved the maxims to be true.

Pliny observes that if we wish to gather grain for the market, we should do so at full moon, because the grain augments considerably in size during the increase of the moon. The first objection to this statement is, that we are deficient in proof of its correctness, and the next is, that, supposing it to be correct, it would be much more rational, as Arago remarks, to seek for the explanation in the slight increase of rain which seems to take place just before full moon, rather than in any direct influence of the moon.

The Italian vine-dressers maintain that wine which is made at the latter end of one lunation and the beginning of another is never so good as that which is begun and completed during one lunation. Toalda explains it thus. "The vinous fermentation never embraces parts of two lunations except when it commences just before new moon; and as the moon then has her enlightened hemisphere turned away from the earth, the atmospheric temperature ought to be at its minimum, and it is well known that fermentation is less active when the temperature is low." Here is the same fallacy as before, in attributing a positive heating effect to the moon's rays, for it has been proved that the moon does not elevate a thermometer so much as $\frac{1}{12\frac{1}{2}}$th of a degree in temperature, a quantity quite insignificant for all practical purposes. The vine-dressers of Italy also tell us that wine ought not to be bottled in January and March, except during the wane of the moon, as it would otherwise be spoiled. Fortunately we are spared the trouble of confuting this dogma, for Pliny tells us just the reverse: he instructs us not to bottle or clarify wine except when the moon is seven days old, that is, when she is increasing. We may therefore safely leave these opposite opinions without an attempt to examine into their truth.

Upon the whole, M. Arago, a man peculiarly fitted to form an opinion on these subjects, thinks that of all the maxims and dogmas respecting the influence of the moon on plants, the greater part are *not true*, and that those which appear to be matters of fact are caused by some other circumstances, and not by the direct influence of the moon.

Almost as many opinions have been formed of the moon's influence on animal bodies as on plants. It is said that the moon's rays darken the complexion. Supposing that the skin does become darkened by long-continued exposure in clear nights, there are two ways of considering the question. Up to a very recent period no substance was known to the scientific chemist, the colour of which was at all affected by moonlight. Recent discoveries in photography enable us now to produce compounds so extremely sensitive to the action of light that their colour is affected by long exposure to moonlight. It is, however, very difficult to see how the lunar rays can change the complexion. When we receive upon the body the light of the moon, the sky is clear: when the sky is clear, heat radiates from animal bodies in the same way as from plants, for we should find that on two nights, the one clear and the other cloudy, when the thermometer indicated the same temperature, the clear night would feel colder to us than the cloudy. Although the animal heat would prevent the cooling of the skin by radiation from going on to too great an extent,—although, for instance, it might not permit hoar-frost to form on the skin,—yet there is reason to believe that a cooling of the skin does take place under these circumstances, and Arago asks, "Who would venture to affirm that the physical condition in which the skin is placed by a very intense local coldness, would not alter its texture nor modify its tint?" He is willing to accept the fact that the skin is apt to change its tint in a clear night, but he would attribute it to the radiation of heat, and not to any influence of the moon.

Pliny and other ancient naturalists stated that the moon spreads an abundant moisture on all bodies which receive its light, and that this light hastens the putrefaction of animal substances. The same opinions extensively prevail at the present day in the West Indies. Without charging the moon with being the cause of these phenomena, it is not difficult to account for them by referring them to *dew*. When the moon shines brilliantly, the sky is clear: when the sky is clear, heat radiates from bodies at the earth's surface: when this radiation occurs, a portion of the aqueous vapour suspended in the air becomes condensed, and settles on the cold body in the form of dew or moisture; and as animal substances putrefy more readily when wet than when dry, this dewy moisture would hasten the process. Hence it is perfectly possible to believe that animal substances putrefy more quickly in the moon's light than in a cloudy night, without looking for the cause in any particular action of the lunar rays.

Some of the ancients assert that lobsters, oysters, and some other kinds of fish, are larger during the increase of the moon than during the wane. The Academicians del Cimento at Florence professed to inquire into this matter, and, admitting the fact, attributed it to the aid which the light of the moon gave to the fish in seeking their food. It has been well observed, however, that exactly as much light from the moon falls on the earth or sea from new to full as from full to new, and therefore the above difference could not exist if the lunar rays produced the effect. Moreover, Rohault asserts, from careful observation, that there is no evidence of the fact itself; that there is no such difference in the sizes of the fish caught at these different periods.

Sanctorius once asserted that a man weighs one or two pounds more at the commencement of a lunation than towards the latter end, and he states that he found it true in himself. We may pretty safely assert that horsemen, sportsmen, and others who are accustomed to be weighed frequently, would be well acquainted with such a fact if it were true. In the absence of such evidence credence is impossible. The butchers of France, and perhaps of other countries, used to entertain the opinion that there is more marrow in the bones of animals at one period of the moon's age than at others, but Rohault, after more than twenty years' observation, found that there was not the slightest ground for such an assertion.

A great many isolated circumstances have been recorded, having for their object to show that human maladies are influenced by the phases and eclipses of the moon. Dr. Mead mentions an instance of a child who always had convulsions at the moment of full moon. Pison speaks of a man who had an attack of paralysis every new moon. Menuret has recorded an instance where epilepsy came on at full moon. Gall is said to have observed that weak and feeble persons are more irritable at two periods of the lunar month than at other times. Faber tells us that when a lunar eclipse took place, a maniac was found to become additionally furious, to arm himself with a sword, and to strike all who came within his reach. Ramazzini reports that the persons attacked with an epidemic fever which raged throughout Italy in the year 1693, perished in great number on the 21st of January, the day of a lunar eclipse. Vallisnieri says that, being at Padua, recovering from a long illness, he was attacked with unusual feebleness and trembling on the day of a solar eclipse, and when, consequently, the moon was between the earth and the sun.

Now although it would not be right to give a denial to all these statements, yet there are two or three circumstances which should be borne in mind in estimating the

probability of truth. We all know the effect of imagination in increasing the maladies of the human frame; and we are all aware of the undefined feeling of dread and awe experienced by many persons at the mention of an eclipse. That the imagination, urged by this dread and awe, should affect the frame, and bring on certain disordered symptoms, is fairly within the bounds of probability. If a person of a weak and superstitious turn of mind should be told, and should believe, that he would die on a certain day, it is not improbable that his death would really be brought on, or at least hastened, by the effect of imagination on the human frame. And so it is likely to be in other cases. It is also worthy of remark that the observations recorded by physicians have seldom been long continued, so that we have no means of judging whether the phenomena occurred uniformly for years.

As far as present observations go, there does not seem any evident reason why the moon should affect either plants or animals, but still it would be rash to say that such affection does not take place. Multiplied observations, for a long series of years, are required before we shall properly understand the subject. Meanwhile it is well to bear in mind the reply of an ancient philosopher, who, when he was asked, "Why is it that foals who have been chased by a wolf become better runners than other foals?" answered, "Why because, *perhaps*, it is not true!" We must be quite certain of the accuracy of the facts before we draw conclusions.

On some future occasion we may probably return to this subject, and collect the opinions and superstitions of the philosophers, the natural historians, the poets and the wise men of the olden time, on the action of the moon on organized beings. The subject has both its interest and its moral. These fancies and superstitions may be amusing enough to those who live in the present enlightened age, but they probably form a remnant of that idolatry which excited the anger of the Almighty against His chosen people when "He turned and gave them up to worship the host of heaven."—Acts vii. 42.

If I looked upon the frame of society only with the eye of an artist, if I cared not what became of human government, or the human character, or anything else human, I should be compelled to see and admit that there is no basis for human welfare, individual, social, or national, none conceivable or possible, none provided by the great Framer of the World, but intelligence and virtue.—Dury.

Weep not, sad moralist! o'er desert plains,
Strewed with the wrecks of grandeur—mouldering fanes,
Arches of triumph, long with weeds o'ergrown,
And regal cities, now the serpent's own;—
Earth has more awful ruins—one lost mind,
Whose star is quenched, hath lessons for mankind
Of deeper import than each prostrate dome,
Mingling its ashes with the dust of Rome.—Mrs. Hemans.

AN ELEPHANT'S PULSE.

There chanced to be a female elephant and her calf stationed not far from my tent. I carried the young one a large basin of sweet tea, after breakfast one morning, into which he dipped his trunk, and drained the contents in an instant; and, perceiving his mamma looking on wistfully, I procured her one also, which she drank with much gusto. Soon after this introduction we became great friends, and the mother and her son were regular pensioners of my teapot; the lady permitting me to take many liberties with her, such as toying with her delicate ear, scratching her neck, &c., and giving me now and then a hug about the waist with her trunk, which in no instance exceeded the reasonable bounds of a friendly embrace. One morning when she was particularly affectionate, I took a fancy to feel her pulse: and, when handling her ear, I groped for an artery at the base, and noted the number of pulsations in a minute, which was twenty-four—and I need scarcely add that there was no want of strength.—Forbes' *Ceylon*.

COMMERCIAL HISTORY OF CURRANTS AND RAISINS. I.

It is perhaps not generally known that the two kinds of fruit which form part of the ingredients of a "Christmas pudding" are nothing more than different varieties of the *grape*, dried previous to the exportation. The terms *currants* and *plums*, as applied to the dried fruits sold by the grocer, are rather ill-chosen, for those names have been long given to two well-known kinds of fresh fruit, cultivated in England, and very different from the similarly named dried fruits.

Dried currants are a species of grape grown in Zante and other of the Ionian Islands, and likewise in the southern parts of Greece. Sir George Wheler, who travelled in Greece a hundred and sixty years ago, gave what was probably the first correct account of their growth and preparation. He states that their name was borrowed from the city of Corinth, where they were first cultivated, and from which they obtained their Latin appellation, *Uvæ Corinthiacæ*, or grapes of Corinth, afterwards changed to currant. He says:—

They grow not upon bushes, like our red and white currants, as is vulgarly thought, but upon vines, like other grapes; only their leaf is something bigger, and the grape much smaller than others. They are also without stones; and in those parts are only red, or rather black. But when I passed Piacenza in Italy, I saw white ones of this kind, only differing in colour.

He proceeds to describe the mode in which the fruit was, in his day, prepared for exportation. The grapes, being ripe by about the month of August, were gathered and placed in a thin layer on the ground, where they were left till dried. They were then gathered up, cleaned, brought into the town, and put into warehouses called seraglios; into which they were poured through a hole above, till the warehouse was completely filled. The currants, by their own weight when thus accumulated in a large quantity, caked so closely together as to require digging out with sharp instruments, when about to be barrelled for exportation. A very primitive mode was adopted for pressing the currants into barrels, viz., by a man, who, getting into the barrel with bare legs and feet, trampled down the fruit as fast as it was laded in. In 1680, the island of Zante bore enough of this fruit yearly to load five or six vessels; Cephalonia three or four; Nathaligo, Messalongha, and Patras, one. The English had a small factory at Zante, and the French and the Dutch had consuls, to regulate the trade with their respective countries. Sir George Wheler adds quaintly:—

The English have the chief trade here; and good reason they should, for I believe they eat six times as much of their fruit, as both France and Holland do. The Zantiotes have not long known what we do with them; but have been persuaded that we use them only to dye cloth with; and are yet strangers to the luxury of Christmas pies, plum-pottage, cake, and puddings, &c.

The same islands which supplied us with currants in 1680, do so at the present day; but the visits of more recent travellers enable us to give a somewhat more complete account of the cultivation and commerce of this article. The species of vine which produces this fruit is of a small size and delicate nature, requiring much care and attention during its growth. Six or seven years elapse after a plantation has been formed, before the vines yield a crop of grapes. The plants grow low, and are supported by sticks. In the beginning of October the earth about the roots of each plant is loosened and gathered up in small heaps, away from the vine. The operation of pruning is performed in March; after which the ground is again laid down smooth around the plant. The crops are liable to injury in Spring from the blight called the *brina;* and rainy weather in the harvest season produces great mischief. The gathering, as before observed, takes place about August or Septem-

ber, and the time required for the drying of the currants is from a fortnight to three weeks, according to the state of the weather. If a heavy shower or a thunder-storm should occur during this interval, (which is not unfrequently the case,) the drying is not only retarded, but is often superseded by fermentation; in which case the fruit is fit only to be given to animals. When the currants are deposited in the seraglio or warehouse, a paper is given to the grower by the *seragliente* or warehouse-keeper, acknowledging the receipt of the quantity delivered; this paper passes currently in exchange from hand to hand till the time of export.

Mr. Macculloch gives many details, which tend to show how oppressive have been the enactments relating to the currant trade, in the Ionian Islands, both when they were under Venetian government, and since they have been placed under British protection. Under the control of the Venetian authorities, five persons, chosen out of the council of nobles, assembled in presence of the *proveditore*, or governor, regulated the price at which currants should be sold; and those who wished to purchase were under the necessity of declaring to the Government the quantity which they were desirous of purchasing. This system was called the *collegetto*. The export duties consisted of an original duty of nine per cent. *ad valorem*, that is, nine per cent. on the value of the currants; a *dazio fisso*, or fixed duty of about four shillings and four-pence per hundredweight; and afterwards of a *novissimo*, or more recent duty, of two shillings and two-pence per hundredweight. This latter portion of duty was remitted in favour of vessels bringing salt-fish, &c., from the northern ports, (chiefly English, Danes, and Dutch;) and it was afterwards relaxed in favour of Russian vessels from Odessa, and ultimately abandoned altogether as being vexatious and unproductive. The *proveditore* received in addition two per cent., and each of his two Venetian councillors one per cent.; so that the fruit, the original cost of which was about nine shillings the hundredweight, cost the exporter very little less than eighteen or nineteen shillings.

But these duties are small, compared with those which the consumers of currants in England have paid since the Ionian Islands came under British rule. The fruit, which at one time brought as much as thirty or thirty-two shillings the hundredweight, had declined in 1832 to eight shillings; but it remained still subject to the Zantiote *dazio fisso*, or fixed duty, of four shillings and four-pence, besides an *ad valorem* duty of six per cent., being together equivalent to a duty of nearly sixty per cent. at that time. Thus much for the Zantiote duties. Meanwhile the British parliament raised the *import* duties, payable when the currants arrived in England, to the enormous amount of forty-four shillings and four-pence per hundredweight, being five times as much as the real value of the currants at that time. The consequences of this most unreasonable duty were soon found to be most disastrous to the currant growers of the Ionian Islands. A decline took place in the culture of the plant, as well as in the circumstances of the proprietors, whose staple export and means of existence were almost annihilated. As the prices fell, and the distress became greater, the necessitous grower was obliged to borrow money at a ruinous interest from foreign merchants, or from the Jews, who were consequently able to dictate the price at which they would take his produce. Still, however, notwithstanding the largeness of the duties, the entries of currants for home consumption amounted, at an average of the years 1829, 1830, and 1831, to nearly a hundred and thirty thousand hundredweight per year, producing a revenue which amounted to nearly three hundred thousand pounds sterling, a fact which has often been adduced to show that the taste for this kind of fruit is both deeply rooted and widely diffused in England.

The British parliament, finding, from the complaints of the merchants and growers, how injurious the high duties were to this branch of culture, adopted a legislative enactment in the year 1833, by which the whole of the duties upon currants were commuted for an *ad valorem* tax of nineteen and a half per cent., being the same as that laid upon olive-oil, another important product of the Ionian Islands. The good effects of this enactment were manifested by an almost instantaneous rise in the price of the fruit which had remained on hand of the crop of 1832. It has been calculated that the average quantity of currants produced during the four years ending with 1832, was 19,686,800 lbs. per annum; of which 17,885,300 lbs. were exported from the Ionian Islands, and the remainder consumed by the islanders themselves.

The origin of the name *currants*, as applied to these diminutive grapes, may be pretty clearly seen by comparing the appellations given to them on the Continent. In *Latin*, they are Uvæ Corinthiacæ, or Passulæ Corinthiacæ; in *French*, Raisins de Corinthe; in *Italian*, Uve passe di Corinto; in *Spanish*, Pasas de Corinto; in *German*, Korinthen; in *Russian*, Korinka, or Opoek. "*Corinth*" is evidently the source whence these appellations were derived.

SPARE MINUTES.

MEDITATED RESOLVES, AND RESOLVED MEDITATIONS.

III.

Had I not more confidence in the truth of my Saviour, than in the traditions of men, poverty might stagger my faith, and bring my thoughts into a perplexed purgatory. Wherein are the poor blessed, if pardon shall be purchased only by expense? Or how is it hard for a rich man to enter into Heaven, if money may buy out the past, present, and future sins of himself, his deceased and succeeding progeny? If Heaven be thus sold, what benefit has my poverty, by the price already paid? I find no happiness in room on earth. It is happiness for me to have room in Heaven.

There is no estate of life so happy in this world, as to yield a Christian the perfection of content; and yet there is no state of life so wretched in this world, but a Christian must be content with it. Though I can have nothing here that may give me true content, yet I will learn to be truly contented here with what I have. What care I though I have not much; I have as much as I desire, if I have as much as I want; I have as much as the most, if I have as much as I desire.

It is the greatest of all sins always to continue in sin. For where the custom of sinning waxeth greater, the conscience for sin grows the less: it is easier to quench a spark than a fire; I had rather break the cockatrice's egg, than kill the serpent.

Nature bids me love myself and hate all that hurt me, reason bids me love my friends and hate those that envy me, religion bids me love all and hate none. Nature sheweth care, reason wit, religion love. Nature may induce me, reason persuade me, but religion shall rule me. I will hearken to nature in much, to reason in more, to religion in all. Nature shall make me careful of myself, but hateful to none; reason shall make me wise for myself, but harmless to all; religion shall make me loving to all, but not careless of myself. I may hear the former, I will hearken only to the latter. I subscribe to some things in all, to all things in religion.

Abundance is a trouble, want a misery, honour a burthen baseness a scorn, advancements dangerous, disgrace odious. Only a competent estate yields the quiet of content. I will not climb, lest I fall, nor lie on the ground, lest I am trod on. I am safest while my legs bear me. A competent heat is most healthful for my body, I would desire neither to freeze nor to burn.

[Arthur Warwick. 1637.]

LONDON:
JOHN WILLIAM PARKER, WEST STRAND.
Published in Weekly Numbers, price One Penny, and in Monthly Parts, price Sixpence.
Sold by all Booksellers and Newsvenders in the Kingdom.

THE

Saturday Magazine.

No. 623. MARCH 19TH, 1842. { PRICE ONE PENNY.

INNOCENCE. FROM THE STATUE BY CHANTREY.

SIR FRANCIS CHANTREY, AND HIS WORKS.

III.

In the year 1822 Chantrey exhibited his bust of His Majesty George the Fourth; in 1824 his bust of the Duke of Wellington, his first statue of Watt, and the statue of Dr. Cyril Jackson, erected in Oxford; in 1826, his statue of Grattan for Dublin, and of Washington for Boston; in 1827, his statue of Sir Joseph Banks, now in the British Museum; in 1828, a bust of Sir William Curtis; in 1829, a statue of Sir Edward Hyde East, for Calcutta; the parting of Hector and Andromache; Penelope with the bow of Ulysses, (now at Woburn,) and a bust of the Marquis of Stafford, now in the British Institution; in 1830, a bust of Sir John Soane, and a group representing Bishop Heber blessing two Hindoo girls, now at Madras; in 1831, busts of His Majesty King William the Fourth, and the Duke of Sussex; in 1832 his statue of Canning, for the Town-hall, Liverpool; in 1833, his statue of Mountstuart Elphinstone for Bombay; in 1837, his statue of Sir John Malcolm for Westminster Abbey, that of Dr. Dalton for Manchester, and busts of Southey the poet, (for John Murray,) Mrs. Somerville, (for the Royal Academy,) and Professor Wilson, of Oxford, (for Calcutta;) in 1840, busts of Her Majesty the Queen, and of Sir Charles Clarke; his statue of Roscoe for Liverpool, and of Northcote for Exeter; in 1841, (the last year of his life,) his statues of Bishop Bathurst and Bishop Ryder, for their respective cathedrals of Norwich and Lichfield.

Besides these works, exhibited at the Royal Academy, may be named his statues of Francis Horner, James Watt, and Sir Stamford Raffles in Westminster Abbey; of Spencer Perceval at Northampton; of Mr. Wildman at Chilham Castle; of President Blair and Lord Melville in Edinburgh; of Sir Charles Forbes for Bombay; a bust of Sir Robert Peel, an excellent likeness; and a bust, the last he lived to execute, for the Queen.

This is a very incomplete list of his marble progeny. Of his statues in bronze there are those of George the Fourth, at Brighton and in Edinburgh; of Pitt in Edinburgh, and Hanover Square, London; equestrian statues of Sir Thomas Munro at Madras; of George the Fourth, the site of which is not yet determined; and of the Duke of Wellington for the City of London.

This last though incomplete is, we are happy to say, left in that advanced state by its great artist, that an ordinary workman may give it all the finish it wants. We wish that the same could be said of the two statues on one bench, of those noble brothers, by birth and genius, Lords Eldon and Stowell; or of the statue of Dr. Goodall, for Eton, or of the Marquis Wellesley, for the India House.

When the Marquess Camden was elected Chancellor of the University of Cambridge, Chantrey was made an honorary M.A., and he received from His Majesty King William the Fourth, the honour of knighthood in 1835. A baronetcy was offered him, but refused on the ground that he had no one to succeed him in the honour. This was in 1836; he was then ailing, more corpulent than usual, and less inclined to active exertion; yet he continued to work with his usual spirit, and nicety of touch.

The suddenness with which Chantrey was removed from the scene of his labours was a matter of no surprise to his medical attendants. In obedience to their warnings he had set his house in order; had constructed a last resting-place in the north side of his native village church; and had been gradually withdrawing himself from a portion of that personal labour in the execution of his great works, which, in the more active years of life, he trusted as little as possible to any other hands than his own. There had not very recently, however, been any urgent symptoms to occasion alarm to his friends: his medical attendants allowed him to take a journey to Norwich, to superintend the erection of his fine statue of Bishop Bathurst in Norwich Cathedral, under an impression that his health might be benefited by the change of air and scene. He returned to his house at Pimlico on the evening of the 24th of November last; on Thursday, the 25th, he looked over letters and accounts, gave his orders, and inspected with the greatest interest the progress that was making in the Wellington equestrian statue. At half-past five, when it was raw and foggy, he imprudently ventured out for a walk, and had not proceeded far when he was forced to return by violent pains in the stomach. A medical gentleman was hastily summoned, whose prescription soon relieved him, and left him free from pain, and in restored spirits. He had just eaten a scanty dinner, as he had been advised, when the arrival of two friends was announced, and on his expressing an anxiety to see them, they were shown in where he was sitting, but entered only to witness the last moments of their friend. He fell back in his chair with a heavy respiration, and expired without a word or a look of recognition. An inquest was held the next day, when a verdict was returned that he died of a spasm of the heart.

Sir Francis Chantrey was about five feet seven inches high, stout, active, and vigorous. His face and head were very fine; his eyes round and lustrous, one useless for vision, but apparently not different from its fellow. He had been bald from an early age. His voice was agreeable, his conversation humorous, sometimes sarcastic, and always animated.

There is a most pleasing frankness and social charm in Sir Francis Chantrey's manner, (says Miss Sedgwick.) I called him repeatedly *Mr.* Chantrey, and begged him to pardon me on the ground of not being "native to the manner." He laughed good-naturedly, and said something of having been longer accustomed to the plebeian designation. I heard from Mr. R. a much stronger illustration than this of this celebrated artist's good sense and good feeling too. Chantrey was breakfasting with Mr. R., when, pointing to some carving in wood, he asked R. if he remembered that, some twenty years before, he employed a young man to do that work for him. R. had but an indistinct recollection. "I was that young man," resumed Chantrey, "and very glad at that time to earn five shillings a day!" Mr. B. told a pendant to this pretty story. Mr. B. was discussing with Sir Francis the propriety of gilding something, I forget what. B. was sure it could be done, Chantrey as sure it could not; and "I should know," he said, "for I was once apprenticed to a carver and gilder." Perhaps, after all, it is not so crowning a grace in Sir Francis Chantrey to refer to the obscure morning of his brilliant day, as it is a disgrace to the paltry world that it should be so considered.

The Mr. R. named in this quotation is Rogers the poet, who, in the manuscript catalogues of his curiosities, directs the attention of visitors to the table which is adorned by Chantrey's carvings.

Chantrey's invention of the new pointing machine, an instrument used by sculptors for measuring statues, though lying in a subordinate line of art, is very valuable, and far surpasses the invention of Bacon, the artist, for its accuracy and rapidity*. Hudon, an eminent French sculptor, on visiting London, saw this instrument for the first time in Bacon's studio, and expressed himself so strongly concerning its beauty and its usefulness, that Chantrey immediately presented him with one. Some time afterwards, a gentleman who had come through Paris called on Bacon, and observing Chantrey's instrument, exclaimed, in surprise, "So you have got M. Hudon's instrument for taking points! I see you don't object to copying the French in some particulars." An explanation took place, when it appeared that Hudon had passed it off for an invention of his own. Chantrey was so much pleased with his new instrument, that he sent correct drawings of it to Canova. The illustrious Italian acknowledged the benefit which such an instru-

* For a popular account of the *Mechanical Processes of Sculpture*, the reader is referred to *Saturday Magazine*, Vol. XIX., p. 239.

ment would confer on art, but lamented that he could not find a head in Rome mechanical enough to comprehend the drawings.

Chantrey possessed a very choice cabinet of sculpture, antiques, medallions, &c. It was an appropriate and affecting, though unpremeditated circumstance, that his dead body lay, at the coroner's inquest, amidst many of the finest forms of the ancient sculptors, of which he had collected the best casts that could be procured.

The mortal remains of this celebrated sculptor were consigned to their resting place at Norton, on the 6th of December last. The funeral was numerously attended by the gentry of Sheffield and its vicinity, as also by deputations from some of the public bodies of that town.

The property of Sir Francis, with the exception of a few legacies, is settled upon Lady Chantrey for her life with a reversionary interest to the Royal Academy, in perpetuity, under trusteeship. Thus an annual sum (stated at about £2,500,) will be at the disposal of the president and council, not the full body of the Academy. This sum is to be expended in improving and enlarging the present mode of studying the arts, and for the purchase of the most valuable works of sculpture and painting, executed entirely within the shores of Great Britain. The council are allowed to purchase the works of deceased artists, such for example as the productions of Roubiliac, who had his studio in London, but they are prohibited from purchasing the works of an English sculptor residing abroad, and, like Gibson, sending his works to this country for exhibition. Chantrey's love for native art and for the Royal Academy is further shown by the provision in his will from which it appears that should the time ever come when the Academy is deprived of royal patronage, and driven from its present building, or reduced in the number of its members, the president and council are, notwithstanding, still to have control of the Chantrey Fund, and to continue to purchase pictures and statues so long as the academicians are true to themselves, or while a limb of the original body is left. Should a self-overthrow occur, the power of nominating judges to rest with her Majesty's Ministers. It further appears that the trustees are prohibited from spending any part of the fund in the erection of any building beyond a temporary one for the reception of the works of art already purchased, and this prohibition is made in the hope, as Sir Francis expresses it, that the government of his country will erect a building worthy of the works which his money has procured and is every year procuring. The president to have a casting vote, and no recommendation but that of merit to prompt or control their decision.

To Mr. Allan Cunningham, who has for many years officiated as Sir Francis' secretary and manager of the financial department, he has bequeathed the sum of 2000*l.* with a proviso that Mr. Cunningham shall remain in the exercise of his duties until the close of the establishment. To Mr. Henry Weekes, who has long been his chief assistant, he has left 1000*l.* on condition that he will complete the works in progress at the time of the testator's decease. To the parish of Norton he has bequeathed, after the death of Lady Chantrey, 200*l.* yearly for so long as his tomb remains, to be applied in the following manner under the direction of the vicar or resident clergyman:—50*l.* a year to be paid to a schoolmaster, to instruct ten poor boys of the parish without expense to their parents; 10*l.* a year to each of five poor men and five poor women either widows or single women; and the remaining 50*l.* a year to the vicar or resident clergyman to preserve his tomb.

We cannot more appropriately conclude this notice than by quoting from the *Quarterly Review* for 1826, the eloquent elogium on Sir Francis Chantrey and his works, said to be from the pen of Mr. Allan Cunningham.

England may justly be proud of Chantrey: his works reflect back her image as a mirror; he has formed his taste on no style but that of nature, and no works of any age or country but his own can claim back any inspiration which they have lent him. He calls up no shapes from antiquity; he gives us no established visions of the past; the moment he breathes in, is his; the beauty and the manliness which live and move around him are his materials, and he embodies them for the gratification of posterity. He seems to work as if he were unconscious of any other rival but nature—the antique is before him, but he prefers flesh and blood, and it would certainly cost him far more labour to imitate the work of another school, than to create an image from the impulse of his own feeling. Robert Burns said, that the muse of his country found him as Elijah did Elisha, at the plough, and threw her inspiring mantle over him, and the same may be said of Chantrey:—it was in a secluded place, a nameless spot, into which art had never penetrated, that the inspiration of sculpture fell upon him: the desire of the art came over him before he knew to what toil he was tasking his spirit. Nature had taken possession of his heart and filled it with forms of English loveliness before he knew that the works of Greece existed; and to this we attribute his success and his fame. An air of freedom and ease—of vigour which comes not from the muscle but from the mind—of sentiment making action her auxiliary, and a look of life and reality are stamped on all his statues, busts and groups. He courts repose, he seems not averse to gentle action, but has never yet sought in violent motion for elements either of sadness or solemnity. We call this not only the true but the classic sculpture of our country. The Greeks charmed the whole earth by working exactly in his spirit. But the liberties which the Greeks took with their Olympus gave them advantage over modern sculptors. A Christian artist allows not his fancy to invade the sanctities of heaven; he presumes not to embody its shapes, he dares not define the presence of God. Our best sculpture is therefore of a grosser nature, less æthereal in form and less godlike in sentiment.

The works of Chantrey are all of a domestic or historical kind; he has kept the preserve of pure poetry for the time when his hand may have uninterrupted leisure, and the cares of providing for existence shall no longer have any right to interfere with fancy. His statues are numerous, and we like his sitting ones the best. Meditation and thought are at their freedom when the body is at rest; and though some of our poets have conceived and composed in the act of walking, we hold that a man who thinks seated will always look more like a man in grave thought than one who stands, let him think ever so stoutly. James Watt is still living as far as sculpture can prolong life; his perfect image meditating on the extraordinary power which man wields so easily and profitably is preserved to the world. The statue of Chief Baron Dundas is graceful and unaffected; that of Dr. Anderson is the literal and perfect image of the happy and benevolent old man; and that of Dr. Cyril Jackson must please all who knew the dean, or love flowing draperies and the memory of Christ Church walk. Of his erect figures Washington is our favourite; the hero of American independence seems the very personification of one wrapt up in thought,—a man of few words, of prompt deeds, with a mind and fortitude for all emergencies. Grattan is a being of another class, earnest, voluble, in motion more than any other of the artist's works, and yet with something both of dignity and serenity beyond what the orator possessed. Horner is anxious, apprehensive and mildly grave; you look, expecting him to speak. General Gillespie is a fine manly martial figure.

In all these works we admire a subordinate beauty—a decorous and prudent use of modern dress. All its characteristic vulgarities are softened down or concealed. There is no aggravation of tassels, no projection of buttons. Though we are conscious that there is no art used in hiding these deformities, the skill of the sculptor has contrived to conceal it in nature.

Our frontispiece will convey an idea of the beautiful statue of Lady Louisa Russell, the present Marchioness of Abercorn, already described in our previous notice, p. 67 of this volume.

A LARGE promise without performance is like a false fire to a great piece, which dischargeth a good expectation with a bad report. I will forethink what I will promise, that I may promise but what I will do. Thus whilst my words are led by my thoughts, and followed by my actions, I shall be careful in my promises, and just in their performance. I had rather do and not promise, than promise and not do.

SKETCHES OF IRISH MANNERS AND CUSTOMS.

V.

THE people here have a curious notion that the seller obliges the buyer, and impress it upon their dealers. A man told the master, that "If he did not consider it a compliment, letting him have his hay, he should not have it," and many ridiculous instances of the same feeling, both to us and amongst themselves, are daily occurring.

Some women were in a shop busily weighing a small quantity of butter, less than a pound, with a young girl behind the counter; eightpence was asked, refused, then sevenpence-halfpenny; sevenpence was offered as the value of the weight: "D'ye think," said the girl, "I am going to make you a present of a halfpenny?" "Oh well," replied the woman, "if you don't think it a compliment to get it I won't give it you at all;" and away she went in a great huff, with her modicum of butter, which was evidently brought because needles, or thread, or some small thing was wanting at home, and could only be got by the sale of the butter.

They never speak of *selling* their goods, but of *giving* them for so much, as if they had scarcely outgrown a system of barter. They have some strange notions about regularly selling their produce, which perhaps I hardly yet understand; but they appear to think it degrading. They either will not sell, or ask a price which no one will give, of course to their own loss and the general inconvenience; but when the rent-day arrives, or any sudden emergency occurs, they are obliged to turn their produce into money as fast as possible, and to bribe a purchaser by offering their things below the price they would readily have obtained at a regular free sale. We have frequently had a message to ask our honors to take so many perches of potatoes, "if we would be plazed to pay before they were dug up, as there was a sum of money to make out next day." The same man had hardly been persuaded to sell us a large quantity of potatoes a few weeks before.

The same feeling, of doing their customers a favour, makes them extremely indignant if any fault is found. I dare not go to my dairy woman, and represent the uneatable nastiness of her butter of late, because, I am very sure, that instead of the civil apology one would receive in England, I should be told that I need not have any more of it if I did not like it—and the vicinity of the farm is a convenience which I do not wish to lose. There is a very tolerable shoemaker in the Glens, who might get on extremely well if he chose; but he keeps a very small job three or four weeks, and will not take the trouble of coming down the fifty yards of our drive though told at the gate that he is wanted, and in every possible way plagues his customers, and injures himself. As feathers show how the wind blow, so do these little instances show the character of the people, and give an idea of the extreme difficulty of doing any thing for them. They require a great deal of exciting on some points, and a great deal of soothing on others.

It appears to me that the class that would be day labourers all their lives in England, will here toil, starve, till they can get a morsel of land, with which they sit down in a semi-contented state, with very mistaken notions of their property and independence, having just enough for rags and potatoes, and no chance of more but by continued exertions, which are utterly distasteful to them. I am inclined to think that the surprising uselessness of the children is often owing to the strange pride of the parents not liking they should be hired out. I have seen many nice-looking girls dawdling away their days, who might earn their livelihood in service, and would probably soon become handy and valuable; and the demand for servants, and the lamentations over the extreme difficulty of getting any, and the badness of such as are to be had, exceed even the English complaints on the same subject.

I think we have an exaggerated idea of Irish dirtiness: take class and class, I should say they are full as clean as our people. The faces and hands at church are infinitely cleaner than I ever saw in a rural or a free church congregation in England, and the whiteness of the caps, with their formidable *chevaux de frize* of double bordering, cannot be surpassed. The girls' hair is generally perfectly clean and neat, and the most beautiful pair of plaited nursery tails I have even seen hung from the head of a neat little snip of a girl at church a short time ago. I suppose she was somewhat vain of her luxuriant tresses, as the girls are generally ambitious of bonnets for Sunday wear. The housewives are as fond of a dresser well plenished with delf and jugs as in England, and seem pleased and proud when their store is admired. In their little beds, hangings, and bed linen, as far as I have been able to observe, they are extremely neat, marvellously so, when the smoky atmosphere of their cottages is considered.

One of their pet phrases is, "I am *sure* of it," said in a most oracular tone of voice, and often on matters on which one is certain they do not agree with the speaker, or on which they can know nothing. One instance gave me the benefit of a good laugh. We were horse or pony hunting, and having heard of a promising young animal, we set off to visit him. We were passed from town to town, like two vagrants, till at last we reached the place, and were told the horse was up the brae, but should be sent for: accordingly a man and horse started in quest of him, and after a long delay reappeared, driving the wild horse before them. Truly he was a promising fellow for saddle or harness, and resented every attempt at putting a saddle on his free back, by rearing, plunging, springing, kicking, launching out with all four feet at once—in short, playing the extraordinary pranks in which an Irish horse does so particularly excel. As his first caper quite satisfied me as to his merits, and I saw that the length and breadth of his *chasées* and *enavants* were not to be calculated, I thought it both prudent and agreeable to retreat into the door-way of a stone cottage adjacent. The good woman came forward, and invited me in so cordially that I could not decline, though longing to see the rest of the horse's antics. I found a wall, run up nearly the height of the side wall across the doorway, making a little entrance-passage, and completely screening the inside from weather and from curiosity. A small turf fire was burning lazily on one side of the room upon the stones of the floor, with nothing like a chimney for five or six feet: at about that height began a sort of a piece or fragment of a chimney, or like a large stone clock case—about the same height, above which the smoke was left free to expatiate around the beams and rafters of the unceiled roof, till it suited its pleasure to issue from the chimney. A spinning wheel was in one corner; a sleek black cat with two kittens slumbered on a wooden chair in another corner: there was the griddle, and the keg, and the crock, and the great pot, and plates and cups,—another chair, on which I was entreated to rest,—a bench or settle, and in the corner of the next side from the house door was a door half open, through which I espied two very clean little beds, with large blue and white checked curtains; they were placed, in the fashion of the country, just across the tiny slip of a room, the length of the bed being the exact breadth of the apartment.

The cottage was very old; I could not get at its age, but the appearance of the stones and the wood showed plain enough that it was no upstart of yesterday. There were two very large wooden posts, or more civilly, pillars, supporting the roof, and an immense deal of timbering, crossing from wall to wall each way; and the whole of it was one beautiful dark rich brown,—just the

colour of Prout's] liquid brown, and appearing well varnished. It looked so clean that I thought it was paint, and made some observation on its warm, comfortable, neat appearance, when the woman told me "it was smoke, and nothing but smoke." We began to wonder to each other whether anything could be made of it, and to talk of the creosote, umber, &c. She looked inquisitive and uneasy at our undertoned chat, so I told her that I believed had it been soot it might have proved of some advantage to her,—that there was a medicine made from soot, and that she might possibly have got a sale for it amongst the chemists. She interrupted my oration at every three or four words with "I'm *sure* of it," in the most knowing manner, which, as she never could have heard of it before, had a most ludicrous effect, and made me very merry as soon as we had with all courtesy taken our leave of her.

This cottage of course was one of the better kind: their being all built of stone hereabouts gives them a substantial look, and raises their appearance far above the mud cabin, whatever their internal equality may be; but all the cottages have a melancholy look from the constant want of the little garden in front, the few china roses and holyoaks, and cabbages of an English cottage. To these little indulgences the climate is as much a bar as the habits of the people. The manners of the class just above the peasantry are generally extremely unpleasant: they seem to have a dread of being civil and respectful, and the want of civility and accommodation in most of the country shopkeepers is both ludicrous and provoking: they are quite affronted if their very ugly and very dear goods are not admired and purchased, and will not attend to orders sent, which is very inconvenient in these far-away regions. I was three week in getting some gray calico from a shop twenty miles off, as they were too lazy to match the pattern they had themselves supplied, and I had only a weekly communication by which I could return their repeated blunders.

In a shop at Coleraine the woman tried very hard to find out our name by substituting Mr. ? with an interrogation, for Sir, which sounded very droll, and we enjoyed baffling her. In another shop the master stumped up and down with his hat on the whole time we were in the shop. The man who attended upon us had to apply to him frequently about the prices, &c: he actually would not sell us the writing paper we required. A quire or two they would have parted with, but half reams and reams they would not even show, and we were obliged to depart with a very limited supply.

I think the westerly winds blow over some American manners to this quarter of Ireland, very little to the advantage of the people. These same westerly gales are tremendous things: indeed from all quarters the winds here when they are disposed to rage do it with a violence and fury that is astonishing and awful to me; though by day there is so much wild grandeur in the scene that I gaze with a sort of shivering enjoyment. The sea with its angry leaden or greenish tints, heaving and curling from the farthest point that I can see, great waves rolling in and casting themselves upon the rocks, breaking with the roar of cannon, and throwing up jets of spray twenty and thirty feet perpendicularly like Geysers; and if a little thought of a sunbeam should struggle through and brighten up the foam into silver, and catch the bluff foreheads of the cliffs, and so deepen the gloom of the ravines, the scene is truly magnificent. I have seen it so several times, but the thought of the peril of such moments to those whose business is in great waters is a great damper to the pleasure, and the moaning of the gale in the pauses of its fury is painfully sad. We have had wrecks, too, in these gales, happily without loss of life, though in some instances there has been much peril. A sloop struck, the crew left her; two men were stationed in her; the gale freshened, the painter of their boat broke and they were helpless; the vessel opening more and more till the water was up to their shoulders; they could not communicate with the shore. and it was so rough that no boat could go off: in this state they passed some hours, till day-light, calmer weather, and ebb-tide allowed them to get on shore, and in good time, for an hour after the ship broke in the middle and rolled over on one side, where I saw her. The next tide she was gone! not two timbers remained of the goodly bark of the day before. Some of the cargo of coal was saved, though mixed with sand, and more might have been saved but the people have very little idea of working hard on such occasions, and besides so much of the coal was stolen that the owner gave the matter up. Wrecks seem always to bring out the evil passions, and though not manifested here with the rapacious ferocity of the Cornish coast, there is quite enough to be very melancholy.

WHAT IS A SPONGE?

Is it an animal or a vegetable? Although sponges have been known from the remotest antiquity, naturalists have differed considerably as to their true character. Some maintain that they are vegetables; others will have them to be animals; and several affirm that they are a sort of polyparia, formed by animals found in their excavations. The ancients admitted that they were endowed with sensation, because they seemed to avoid the hand which would touch them, and appeared to resist the efforts that were made to remove them from their submarine dwelling. They supposed sponges to hold an intermediate rank between animals and vegetables, and this opinion was supported, with certain modifications, down to the time of Rondelet, who denied that they possessed any sensibility. Hence arose the hypothesis that they were wholly vegetables, and they were accordingly classed by Tournefort and Linnæus as such. In the present improved state of natural history sponges are regarded as zoophytes: they occupy the lowest station in the scale of organization, and the name *Porifera* has been assigned to them by Dr. Grant, to whom we are greatly indebted for our knowledge on this subject.

The tribes of Porifera which form the various species of sponge are found in great abundance on every rocky coast of the ocean, from the shores of Greenland to those of Australia. They attain a larger growth within the tropics, and are found to be smaller and of a firmer texture as we approach the polar circles. They occur as well in places covered perpetually by the sea as in those which are left dry at every recess of the tide. They adhere to, and spread over the surface of, rocks and marine animals, and cling so firmly as not to be removed without laceration or injury to their bodies. Although they thrive best in the sheltered cavities of rocks, they come to maturity in situations exposed to the unbroken fury of the surge. They cover the nakedness of cliffs and boulders: they line, with a variegated and downy fleece, the walls of submarine caves, or hang in living stalactites from the roof.

The external appearance of sponges approaches that of many plants, but the internal organization is altogether different from any known vegetable. They are composed of a soft flesh, intermingled with a tissue of fibres, some solid, others tubular, and the whole inter-

woven into a curiously complicated net-work. The solid portion, or basis of the sponge, (composed partly of a horny and partly of a flinty or chalky matter,) is called the *axis* of the zoophyte; and as it serves to support the softer substance of the animal, it may be said to perform the office of the skeleton in the higher orders of animals, by giving form and protection to the entire fabric.

The fleshy portion of the sponge is of so tender and gelatinous a nature, and is so much injured by the slightest pressure, that the fluid parts escape, and the whole soon melts away into a thin oily liquid. The soft flesh, as seen by the microscope, appears to contain a number of minute grains, surrounded by transparent jelly. The surface of every part of a living sponge presents to the eye two kinds of orifices: the larger having a rounded shape, and usually raised margins, which form projecting nipples; the smaller being far more numerous, and very minute, constituting what are usually called the pores of the sponge.

It is to the superficial layer of gelatinous substance that naturalists so long assigned sensibility, and a contractile power which enabled it to shrink from the touch. The round apertures visible on the surface of sponges were also supposed to dilate and contract, so as to establish numerous currents of water, whereby the function of nutrition was supposed to be served. Dr. Grant has, however, clearly proved that the sponge does not possess in any sensible degree that power of contraction which has for so many ages been ascribed to it; and he has also shown the true nature of the currents of fluid issuing at different points from the surface of these animals, as well as the absence of all visible movements in the orifices which give exit to the fluid.

In the course of a large number of experiments, Dr. Grant could never detect the slightest appearance of contraction produced in any part of the sponge by pricking, tearing, burning, or otherwise injuring its texture, or by the application of corrosive chemical agents. He gives the following interesting account of his discovery of the fluid currents:—

I put a small branch of the *Spongia coalita*, with some sea-water, into a watch-glass, under the microscope, and on reflecting the light of a candle through the fluid, I soon perceived that there was some intestine motion in the opaque particles floating through the water. On moving the watch-glass, so as to bring one of the apertures on the side of the sponge fully into view, I beheld, for the first time, the splendid spectacle of this living fountain, vomiting forth, from a circular cavity, an impetuous torrent of liquid matter, and hurling along, in rapid succession, opaque masses, which it strewed everywhere around. The beauty and novelty of such a scene in the animal kingdom long arrested my attention, but after twenty-five minutes of constant observation, I was obliged to withdraw my eye, from fatigue, without having seen the torrent for one instant change its direction, or diminish, in the slightest degree, the rapidity of its course. I continued to watch the same orifice, at short intervals, for five hours, sometimes observing it for a quarter of an hour at a time, but still the stream rolled on with a constant and equal velocity.

After this the current gradually declined in rapidity, and in the course of another hour ceased entirely. Dr. Grant afterwards observed similar currents in a large variety of species. They take place only from those parts which are under water, and cease as soon as the same parts are uncovered, or when the animal dies. Should any of our readers have an opportunity of procuring the living animal, the currents issuing from the larger orifices may be observed by placing the sponge in a shallow vessel of sea-water, and strewing a little powdered chalk on the surface, the motions of which will render the currents very sensible to the eye. The appearance of these currents under the microscope is attempted to be shown in the figure.

The round apertures in the surface of the living sponge seemed therefore to be destined for the discharge of a constant stream of water from the interior of the body, carrying away particles which separate from the sides of the canals. For the supply of these constant streams a large quantity of water enters into the body of the sponge by the myriads of minute pores which exist in every part of the surface, and this water conveys materials necessary to the support of the animal. The pores convey the fluid into the interior, where, after filtering through the numerous channels which pervade the whole substance, it is collected into wider passages, and finally discharged. The means by which the animal produces these currents, and extracts nutrition from them, are entirely unknown; they are most probably occasioned by some internal movements: the structure of other zoophytes would lead us by analogy to ascribe them to the action of fibrils projecting from the sides of the canals through which the streams pass, but the highest powers of the microscope have failed to detect these fibrils.

The structure of sponges is as regular and determinate, and presents as systematic an arrangement of parts, as that of any other animal. In some species, as in the common sponge, the basis is horny and elastic, consisting of cylindric tubes, which mutually communicate, and form continuous canals throughout the whole mass. Others have a kind of skeleton, composed of a tissue of needle-shaped crystals of chalk or of flint, disposed around the internal canals of the sponge, so as to protect them from compression, and from the entrance of noxious substances.

Although, in common with zoophytes in general, sponges are permanently attached to rocks and other solid bodies in the ocean, yet in the earlier stages of their growth they are endowed with considerable powers of locomotion. The means employed in the general economy of nature for the multiplication and dissemination of each race of beings, are calculated to excite our admiration and gratitude. The parent plant scatters its seeds around, where they take root in the adjacent soil, or they are borne by the winds or the waters to less populous localities. In animals which are endowed with a wide range of activity, the young are at first helpless, and require all the fostering care of the parent, unless, as in the case of some oviparous tribes, a store of nutriment is provided for the young one in the egg, where it remains until it has acquired locomotive powers, to enable it to go in search of food. In sponges the parent remains fixed to one spot, and sends away its young to seek a proper habitation, and these having done so, remain fixed during the remainder of their existence.

At certain seasons of the year the parts of the *Spongia panicea*, which are naturally transparent, contain numerous opaque yellow spots, which consist of groups of eggs, or more properly *gemmules**, since they do not appear to have any external covering or shell. In the course of a few months, these gemmules enlarge in size, each assuming an oval or pear-like shape: they may then be seen projecting from the sides of the internal canals of the parent sponge, to which they cling by their narrow extremities. In due time they become successively detached, and are swept along by the currents of fluid which are rapidly flowing from the larger orifices. When thus detached, they do not sink to the bottom of the water, as would be the case if they were devoid of life, but by their own spontaneous motions they continue to swim about for two or three days after being turned out of house and home. In their progress through the water they carry their rounded broad extremity forwards. This part, when examined by the microscope, appears covered with short filaments, or *cilia*, which are in rapid vibration: they occupy about two-thirds of the surface, leaving the narrower portion, which has a whiter and more pellucid appearance, uncovered. These cilia

* The word *gemma*, from which gemmule is derived, signifies, in Latin a *bud*, and is applied to the young of those zoophytes which are not inclosed within an envelope or egg.

without any apparent regularity, but sufficient to give an impulse in a particular direction. When the body is attached by its narrow end or tail to a fixed object, the motion of the cilia on the fore-part of the body causes a current to pass in a backward direction, or towards the tail; but when floating in water this action propels the little animal in the opposite direction, that is, with the broad extremity foremost. Thus they advance, without any apparent definite object, quite unlike the rapid darting motions of animalculæ in search of prey. Yet they appear to have a sort of consciousness of impressions made on them, for if their progress be impeded by an interposed object, or by striking against each other, they relax somewhat the rapid motion of the cilia, wheel round the spot, and then proceed as before.

After two or three days' wandering, the gemmules are observed to fix themselves on the sides or bottom of the vessel in which they are contained; and some of them are very minute and transparent, broadest at their base, and tapering to invisible points at their extremities: they strike the water by a rapid succession of inflexions, are found to expand like a thin membranous disk on the surface of the water. In the former case they cling by the narrow extremity, which gradually becomes by lateral expansion a broad base of attachment. In the mean time the cilia on the upper part are kept in rapid motion, scattering about the opaque particles which may be in the fluid. The vigour of these motions now relaxes, and ceases within a few hours after the animal has become fixed to its abode; and the cilia, being no longer wanted, disappear. The gemmule then has the appearance of a flattened disk containing granules like the flesh of the parent sponge, and also several spicula interspersed through the central part. Within twenty-four hours a transparent colourless margin has extended round the whole gemmule, and continues to surround it during its future growth. The spicula, which were at first small, confined to the central part, and not exceeding twenty in number, now become much larger and more numerous; and some of them shoot into the margin just noticed. It is remarkable that the spicula make their appearance completely formed, as if by sudden crystallization, and never afterwards increase in size.

Two gemmules contained in a watch glass have been observed in the course of their spreading to come in contact, and the clear margins then unite, thicken, and produce spicula; in the course of a few days no distinction can be observed between them; they continue to grow as one animal. The same thing is said to occur to adult sponges, which on coming into contact unite permanently. A species of "animal grafting," as Dr. Roget aptly terms it, in which we find an analogy between the constitution of zoophytes and that of plants.

In the course of a few weeks the spicula are arranged in groups as in the parent sponge; assuming circular arrangements, and presenting distinct sponges at the points they inclose. The young animal grows rapidly, becomes more convex and more compact and opaque; and before it has attained the tenth of an inch in diameter it presents to the eye when assisted by the microscope, a miniature representation of its parent.

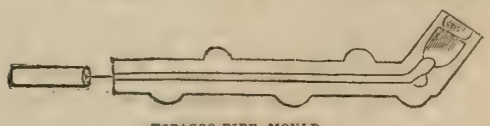
Thus has a power of spontaneous motion been given to what may be regarded as the embryo condition of animals, which are afterwards so remarkable for their inertness, and for the privation of all active powers; and it has been conferred evidently for the purpose of their being widely disseminated over the globe. Had not this apparatus of moving cilia been provided to the gemmules of such species as hang vertically from the roofs of caves, they would have sunk to the bottom of the water, and been crushed or buried among the moving sand, instead of supporting themselves while carried to a distance by the waves and tides of the ocean. Many species which abound in the Red Sea and Indian Ocean have in this way been gradually transported, by the gulf stream, from the shores of the east to corresponding latitudes of the new world.—Roget

ON THE MANUFACTURE OF TOBACCO-PIPES.

Some of the most insignificant articles in daily use are invested with considerable importance, when we regard the extent to which they are manufactured, and the employment thus given to a great number of persons; or when we consider the curious and interesting processes through which they pass ere they reach us in their familiar and useful form.

The manufacture of tobacco-pipes is a branch of the potter's art, which thus acquires importance from the great demand for the article and the methods employed in producing it. Perhaps these methods may not be known to the generality of our readers; we shall therefore attempt to describe them. The clay of which tobacco-pipes are made is obtained chiefly from the island of Purbeck, in Dorsetshire, and is valuable on account of its extreme whiteness. Teignmouth, in Devonshire, also furnishes a fine clay employed for this purpose. Much diligence is necessary in purifying the clay from all extraneous matters, before it is used for the purposes of the manufacturer. It is therefore thrown into large pits of water, and softened, the mixture being well stirred up, that the stones and coarse matter may be deposited; the clayey mixture is then poured off into another pit, where it subsides and deposits the clay. The water is drawn off as soon as it is clear, and the clay at the bottom is left sufficiently dry for use. The clay is now spread out and beaten with iron bars to temper and to mix it, and when the purification is fully accomplished, the workman, from time to time cuts off small portions, each sufficient to form one pipe, and after kneading them thoroughly upon a table, rolls them out as nearly as possible to the form and size of a pipe, and sticks a small lump to the end of the cylinder to form the bowl. If he is an experienced workman he will make a very near approach to the proper dimensions, and will generally fill the mould, in which the clay is about to be placed, so accurately, as to leave but a trivial portion of surplus clay to be afterwards taken off. These rolls, however, are not placed in the moulds at once, but are allowed to harden, sometimes for a day or two, until they become sufficiently dry for the purpose. They have now to undergo a process which calls for considerable skill and address on the part of the workman, and which can only be satisfactorily accomplished after long experience. This is the boring of the stem by introducing an iron needle. For this purpose the roll is taken between the two fingers, which follow the point of the needle as it is gently pushed forward by means of its wooden handle. The needle has a circular enlargement near the point, which is oiled, and can be felt through the clay, and which renders the operation somewhat less difficult.

The pipe is now ready to be placed in a folding brass or iron mould, channelled inside of the shape of the stem and bowl, and capable of being opened at the two ends. This mould is formed of two pieces, each hol-



TOBACCO-PIPE MOULD.

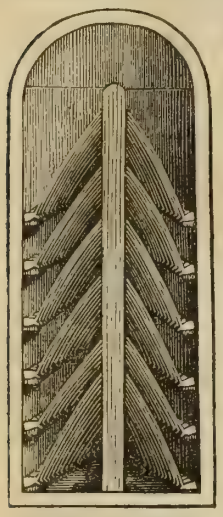
lowed out like a half pipe, and cut lengthwise, so as, when brought together, to make the exact space for one pipe. In one side of the mould there are small pins, and in the other, holes corresponding with them, by means of which the two parts are fitted together with precision.

The workman lays the pipe, with the wire remaining in it, into the groove of one part of the mould, and taking the other part, brings the two smartly together and unites them by a clamp or vice. A lever is now brought down, which presses an oiled stopper into the bowl of the pipe, while it is in the mould, forcing it

down sufficiently to form the cavity; the wire being at the same time thrust backwards and forwards, so as to pierce the tube completely through. The wire is now withdrawn, the jaws of the mould opened, the pipe taken out, and any redundant clay removed with a knife.

The pipes are now again allowed to dry for a day or two, after which they are rubbed with an appropriate horn instrument, which is adapted for smoothing and perfecting the bowl. The stems are also bent into the desired form, or the pipe is placed a second time in the mould that any imperfections may be remedied. The last polish is given by rubbing them with flints, bored with holes, some of which are of the diameter of the pipe, while others are large enough to admit the bowl. So rapid and easy of accomplishment are all these processes, that a clever moulder will furnish 3500 pipes in a week. After the last polishing, the pipes are conveyed to the baking-kiln, the construction of which must next be described.

A tobacco-pipe kiln should diffuse the heat of the fire in an equal manner to every part of the interior, while it excludes the smoke of the fire. The kiln is therefore built of brickwork, in a cylindrical form, the top forming a dome, and the chimney rising to a considerable height in order to promote the draught. The inside is lined with fire-brick, and at the bottom is a circular fire-place. Over this fire-place stands the large crucible, or *sagger*, in which the pipes are to be backed. The construction of this crucible is ingenious: the bottom is composed of a great many fragments of pipe stems, radiating from the centre; these are coated at the circmference with a layer of clay. A number of bowls of broken pipes are inserted into this clay; and in these, other fragments are placed upright to form the sides of the cylinder. The dome of the crucible is formed in the same lath-and-plaster way with broken pipes and clay; and so also are some projecting ridges on the outside. This method of making the crucible is not a mere economic arrangement for the employment of old materials, but is preferable to any other mode on account of the thinness of the cylinder attained by it, at the same time that the strength is so great as to render it little liable to split asunder. Inside the crucible a pillar of clay is placed in the centre, and six horizontal ledges are left at equal distances round the sides. Upon these ledges the bowls of the pipes are arranged, while the stems are made to lean against the central pillar. The crucible is capable of containing in these six divisions fifty gross of pipes, and if the heat of the furnace is properly kept up, these will be sufficiently baked in seven or eight hours. Between the crucible and the lining of the kiln, a space of about four inches is left all round for the circulation of the flame, only interrupted at intervals by the projecting ridges on the outer side of the crucibles, which form so many flues for the direction of the heat. The well-known property of tobacco-pipes of adhesiveness to the tongue, is owing to the affinity which the clay has for water; a quality which is much increased by the baking process.



TOBACCO-PIPE CRUCIBLE.

The tobacco-pipes of Natolia, in Asiatic Turkey, are prized above all others: They are made of *meerschaum*, a somewhat plastic magnesian stone, of a soft greasy feel, which is softened in water previous to the manufacture, and which becomes very hard and white in the kiln.

There is an extensive manufacture of tobacco-pipes carried on in Holland, whence large quantitities are exported annually. The Dutch are indebted to England for their first knowledge of this art; and in some of the most extensive pipe-works, the principal working tools are still known by English names.

THE AUSTRIAN NOBILITY.

FROM all I can see and learn, I am inclined to believe that the highest class of people here, I speak now of the men, are very *low* in point of knowledge and understanding. They receive a detestable education, generally at home, from a French Abbé. Indeed education is in general by no means properly attended to. It is said to be best in the Military College; where, at any rate, they learn some mathematics.

A great nobleman here is in general a dull, ill-informed, and very debauched person; which is all natural enough, considering his wealth, his want of a career of honourable ambition, and his dignity, which enables him to trample with impunity upon those decencies which are held indispensable in a better-regulated society. The women seem to deserve the character they enjoy all over Europe, of being far superior to the men. I understand, for instance, that Prince Metternich's daughter, who was a year or two ago married to a Count Esterhazy, very properly began his education by destroying his numerous and valuable collection of tobacco-pipes, and by teaching him to read.

Smoking, as I need not remind you, is a most important business in the life of almost every German of whatever condition. And to say the truth, I am rather inclined to consider it as a good thing for the common people. If they did not smoke, they would probably drink more. It is a sort of defence against cold and bad air, and supplies a cheap, tranquil, harmless amusement. But it is an odd way for a gentleman to pass his day.

You know what sort of a government they have here—a heavy, lazy, stupid, and stupifying despotism, but not violent nor cruel.

Young men of family are generally bred up at home by a French tutor, who is often any thing but a respectable person. You may easily imagine what an effect this must produce. Among us, the defects of those who have had the misfortune to receive a private education, or, what is sometimes the same thing, no education at all, are corrected by the influence and example of those that have been more lucky; but where such a system prevails exclusively, it must occasion universal degradation. The public and private character of the Austrians seems to be pride without dignity. The country and the individuals rise at once, whenever they can, to the utmost height of unchastised insolence, and are equally capable of sinking to the lowest point of sycophancy and submission. The barbarian stateliness of their grandees forms a most ludicrous contrast with the humble anxiety with which they pay their court to power. The middling and lower orders are better than their superiors. They are rather rude and coarse, but still good weight enough. Crime seem scarce among them; and I must do Germany the justice to say, that it appears to me, of all the countries I have been in, that in which there is the most tranquil and inoffensive enjoyment of life. I lament very much that the governments are all despotic. The Germans, especially in the north, are capable of something better. They possess a very tolerable share of instruction; and their slowness, gravity, and phlegm, would occasion them to respect the forms of a free constitution, which French vivacity will always be trying to overleap. Indeed, I have always considered it as a great misfortune to the cause of liberty, that the first grand experiment of *rumfordizing* an old monarchy was made with such inflammable materials. The republican parts of a German constitution would be infinitely less liable to explode, to the destruction of the rest, and the peril of the whole neighbourhood.—LORD DUDLEY'S *Letters*.

LONDON:
JOHN WILLIAM PARKER, WEST STRAND.
PUBLISHED IN WEEKLY NUMBERS, PRICE ONE PENNY, AND IN MONTHLY PARTS, PRICE SIXPENCE.
Sold by all Booksellers and Newsvenders in the Kingdom.

THE

Saturday Magazine.

No. 624. MARCH 26TH, 1842. Price One Penny.

THE HANSE TOWNS OF GERMANY

DANTZIC, FROM THE RIVER.

At the distance of about five miles from the Baltic Sea, at the junction of the Mottlau and Radanne with the Vistula, rise the towers of the town and fortress of Dantzic, in the West Prussian province of the same name. It is situated very agreeably in a fine country: on the western side are eminences, which are fortified towards the town; while meadows and fertile marshes surround the city on the south-east and north sides. Dantzic is removed about a mile from the Vistula: the Mottlau and Radanne flow through it; and the former divides into two arms forming the Speicherinsel, or Magazine Island, in which are the merchants' warehouses apart from the city.

Exclusive of the suburbs, Dantzic is entirely inclosed within walls and surrounded by a moat. It is divided into the Rechtstadt, the Altstadt, the Vorstadt, Langgarten, Niederstadt, and the Speicherinsel. The Rechstadt also includes a somewhat extensive quarter, formerly occupied by the castle of the knights of the Teutonic order, who during a long period held possession of the city.

Including the suburbs, Dantzic has 5172 houses, and 54,756 inhabitants. The city is neither regular nor handsome, but is attractive and singular from the masts and flags rising above the roofs and the gates of the streets, which open on all sides towards the Mottlau, which is covered with numerous vessels. In the narrow streets near this river, the thoroughfare is often blocked up by a crane or a projecting shop, or a windlass raising bales of goods in the warehouse.

In these same narrow streets we hear the cheerful songs of the workmen in the sail-cloth manufactories, who sit before the houses, mending the sails of some East Indiaman moored close by. There is something in these scenes of busy life, which engages the fancy, and in a manner transports it to all four quarters of the globe. Whoever desires to form a correct idea of the mode of life in this singular city, which trades with almost all the nations of the earth, should walk over the long bridge on the Mottlau, where he will have a very diversified prospect of the river covered with innumerable little vessels and white sails, passing to and fro. A walk through the fishmarket, along the Mottlau, affords much variety with its incessant bustle, and the Speicherinsel presents also a scene of great animation.

From this island the bridge called the Grüne Brücke (green bridge,) leads through the Grüne Thor (green gate,) into the interior of the city to the long market. Over the Grüne Thor is the spacious apartment in which the Society of Natural History in Dantzic holds its meetings. On the right of the market is a fine gothic building called Arthushof or Junkerhof. It consists of a large hall, the vaulted roof of which is supported by four slender pillars of polished granite. It contains many works of art, among which may be noticed the Day of Judgment, painted in the year 1601, by Anthony Müller, pupil of Raphael. The original use of this hall was as a place of meeting for the citizens, (called *Junker* in former times,) for their drinking feasts. To preserve order at these banquets, the Junker were divided into certain benches or seats, on which those only were allowed to sit who belonged to those benches and submitted to their regulations. Of these benches there were six: the Reinhold's bench; Christopher, or Lubeck bench; the bench of the Magi; the Marienburg bench; the Dutch bench; and the Seaman's bench. The Reinhold's bench was the most distinguished.

The most ancient account of the bench is as follows:—"In the year 1481, we met in King Arthur's Hof to drink, when Austen Tiergnot was chosen president of St. Reinhold's bench, Hans Schmoll his deputy, Klaus Dongeheim his secretary, and Balzer Greibe his assistant." At that time the number of the members of this bench was one hundred and six. The pewter side-board, which stands near the north entrance, and the music gallery over it, are of the same period. A manuscript of the seventeenth century describes in the following terms the destination of Arthushof:—

That the citizens met together in the evening, after the business of the day was over, and there drank together, and carried on instructive conversation on various subjects with great decorum; so that, when any one had a guest from the neighbouring towns, he hardly knew how to show him more honour than by inviting him to accompany him to the Junkerhof, not only to enjoy a good wholesome draught of Dantzic beer, but especially to witness the good order and social harmony which prevailed there.

About the year 1676 the Hof became used as an exchange, afterwards as a shew-room, and for the general purposes of trade.

Opposite the Hof is a handsome fountain of grey sandstone with bronze figures, and in the neighbourhood is the fine tower of the Senate-house, at the top of which is the statue of a man in armour richly gilt, serving as a weathercock. Not far from this place is a lofty square brick tower, called the Stockthurm, or Prisoners' Tower, erected in 1346, for the defence of the city, but now used as a prison.

One of the finest buildings in Dantzic is the metropolitan church of St. Mary's. It is in the form of a cross. The square tower contains seven bells of considerable size, the largest of which requires twelve men to ring it. Among the objects of curiosity within the church is the font under the great organ. This work, which was cast in brass at Antwerp, and purchased in 1554, is sixty-two feet in circumference, being an octagon in the form of a colonnade, surrounding the font, which is also of brass. There are three steps to the entrance, which is closed by folding doors, also of brass, and curiously fretted. The upper part of this work is wanting; it is reported to have been lost on the passage by sea. A very old painting of the day of judgment is worthy of notice, both for its merit and its antiquity. It has been considered as a work of the brothers John and Hubert Van Eyk. In 1707, Peter the Great offered the senate a considerable sum for this picture, but it was refused. In 1807 it was by Napoleon's order sent to Paris; but in 1815 the Allies restored it to Dantzic. Another curiosity here is a large astronomical clock, made in 1470, by Hans Düringer, a native of this town. Besides the hours and days of the month it indicated the daily position of the planets, and was also furnished with a variety of figures set in motion by the works. It is related that Düringer having obtained great celebrity by this work, was invited to Hamburg to construct a similar one: but that the citizens of Dantzic moved by jealousy, had, as he would not refuse that invitation, caused his eyes to be put out. The blind artist, shortly before his death, caused himself to be led to his work, and with a pair of scissors, cut in two a single wire, by which the whole mechanism was deranged. All attempts to repair it have failed. Under this clock is an ancient vault, said to be the entrance to a subterraneous passage, which led from St. Mary's church to the palace of the Teutonic knights. In this church is also an admirably wrought crucifix, respecting which the absurd story has been related, that the artist, an Italian, (according to some accounts Michael Angelo,) enticed a handsome youth into his house, gained his attachment by kindness and flattery, and at length crucified him, in order to make a fine copy from that original.

Among the other churches, of which there are twenty in Dantzic, that of St. Catharine, in the Altstadt, is remarkable for its handsome square tower and fine chime of bells. This church is the burial-place of the celebrated John Hevelius, recorded by a pyramidal monument of marble. There is an admirable portrait of him, as well as an original oil painting of Copernicus, in the Observatory, erected on the Bishofsberg, in 1780, by Dr. Von Wolf. Among its valuable contents are a mural quadrant by Sisson, a meridian telescope by Ramsden, a telescope by Short, one by Martini, a clock by Shelton, a Hadley's octant, &c.

The library of the Senate, or Gymnasium, contains many rarities, among which are a fine copy of Hevelius' *Machina Cœlestis*, and one of his *Selenographia*; both works are most tastefully and splendidly coloured by Hevelius himself. The brass instruments as well as the constellations are painted in gold, and the spots of the moon in silver. These two copies were intended for Louis XIV.; but why they were allowed to remain in Dantzic is not known. The library possesses also a quarto volume, with several manuscript treatises of Luther, which he prepared for the press on the Wartburg, and a Psalter, by Frobin, which he had in daily use, and in which he has written in his own hand the history of his excommunication.

This library originated in 1580. It was subsequently enlarged by presents, especially in 1597 by a legacy of Marquis Doria. This accomplished nobleman, who was born at Naples in 1517, was highly esteemed, as well at the Papal Court, as by the Emperor Charles V. As a friend and promoter of the Reformation, he was, however, obliged to leave his country. After wandering about for forty years, and experiencing much adverse fortune, he found a permanent abode in Dantzic. In 1592 he made a will in which he left to the Gymnasium his very considerable library and various curiosities, all of which he then gave up, on condition that the senate should support him according to his rank till his death, which took place in 1597.

Attached to the library is a fine cabinet of medals, which has been gradually formed by bequests and donations. There are several other libraries in Dantzic, and also those buildings which being common to large towns we need not describe.

The environs of the city contain some pleasant walks. Broad paths running along the city moat, separated by barriers from the carriage way, lead to the Oliva and Petershagen gates. Proceeding along these paths there is on one side the green turf of the rampart, over which the city appears, and below is the broad clear moat, which almost resembles a river. These paths, which are much frequented, all lead to the Irrgarten, and passing through the Oliva gate the pedestrian comes to the double avenue of Dutch lime-trees, which is a favourite promenade of the citizens, and commands some beautiful and striking views, such as the Vistula and Weichselmunde, and on the left, hills and woods, plantations and villas, together also with the village of Langefuhr, which forms one long street, and consisting chiefly of country houses and public gardens, is a most agreeable place of recreation.

Beyond Langefuhr the prospect opens over level country, here and there diversified with wood, and then extends over the sea, the road and the harbour, and on the left to Oliva, of which the church is large, well-lighted, and has several remarkable monuments. In the convent of Oliva the celebrated treaty which restored the tranquillity and peace of the North, was concluded in the year 1660. The apartment in which the negociations were carried on is still shown, and the memorable event recorded on a slab of black marble.

The gardens belonging to the Abbey are extremely beautiful, not only for the taste and skill with which they are laid out, but for the fine prospects which they command. But the most extensive view is obtained from

Carlsberg, near Oliva. Bishop Charles, Count of Hohenzollern, purchased that eminence and two adjoining it, for the purpose of laying out gardens and plantations. To the very summit of the principal hill, which is entirely covered with shrubs and wood, a broad winding road was made, strengthened by large masses of rock and brick-work. From this principal road there issue numerous side paths, some dark and retired, and others lighter, which lead to pleasant resting-places, hermitages, and arbours, through winding paths, which every where afford a most beautiful and diversified prospect. At the summit of the hill is a Chinese summer-house. Over the saloon is a balcony, with an open staircase leading to it. Raised far above the surrounding woods and plantations, the eye looks down on the variegated carpet, with its groups of houses, trees, corn-fields, meadows, ponds, and brooks. In the horizon extends the broad and boundless surface of the sea, with its ships sailing in different directions. Nearer to the spectator, by the side of a bubbling stream, is a row of buildings belonging to a manufactory in the midst of trees of various hues, and at the foot of the hill is Oliva, with its gardens, the church, the convent, and the abbey. This natural panorama, when illumined by the morning or evening sun, affords a high treat to the lover of the picturesque.

But the most extensive view of the sea, with the road and peninsula of Hela, is from the terrace in front of the inn of the neighbouring tea-gardens of Hochevasser.

The coasts of the distant islands, (says a traveller who visited it in 1807,) shone in liquid gold, and the sea lay extended like a sapphire mirror, traversed here and there with streaks of purple. It was a lovely picture, but life and activity were still wanting; when on the distant edge of the horizon, sails, bright in the first rays of the morning sun, approached the harbour in different directions. A division of the English fleet was then in the road, the report of the morning gun passed over the surface of the waves, and gave the whole squadron a signal to change its position. Boats, with the swiftness of arrows, shot backwards and forwards, and the immense masses of the men-of-war moved with majestic grandeur. Two of them hoisted sail, and soon disappeared in the horizon, while the ships approaching the coast became more and more distinguishable in the increasing lustre of the unclouded sun, till reaching the close of all their perils they cast anchor, cheerfully saluting their native shores.

Here, too, I witnessed a storm: the waves rolled like mountains to the shore: with mighty power the wings of the storm swept the agitated waters. The whole sea was like a mountain of foam, which here rose gigantic from the depths, and there sunk again into the abyss. The ships danced like nutshells, in this immense tumult. Suddenly the cables of one broke; now it plunged into the bosom of the deep; now it appeared again above the surface. Now the waves tossed it like a ball upon their backs, and then covered it like mountains. Once more it appeared amidst the universal uproar; but the masts were broken, the cordage gone, the sails fluttered in the air, an avalanche of water rolled over it—one moment, and it was gone. The angry waves cast the wreck in large fragments on the beach.

Of all the blessings which are bestowed upon the good there is none perhaps more expedient for us, or more to be requested of God, than a spirit of impartiality with respect to ourselves, together with that accurate discernment, that suspicious severity, that care to distinguish between real probity and the false appearance of it, and that caution not to be imposed upon by hypocrisy and dissimulation, which we usually exert, when we scan the actions and the pretensions of other people. This is the best security against the dangerous illusions of self-love. The lower we place ourselves, the higher we shall rise in the favour of God; and the readier we are to censure our own defects, the nearer we shall be to repentance and amendment.—JORTIN.

PITY is a sentiment so natural, so appropriate to the female character, that it is scarcely a virtue for a woman to possess it, but to be without it is a grievous crime.

ON GRAFTING.

THE month of March is generally chosen for the scientific operations of grafting, inarching, and budding. These are branches of the gardener's art, of which it may be interesting to give a short account. Every one is acquainted with the fact that certain portions of some plants may be grafted upon others, so that the two shall completely unite and form but one tree. Even those who have never seen a graft in their lives, must have heard of this system, and must be familiar with the scriptural use of the term, which accords with the ancient way of writing the word, "graffing."

Grafting appears to be a practice of high antiquity, and it is imagined that it had its origin in the observation of a natural process of no unfrequent occurrence. When ivy has grown to a considerable size, the branches often interlace and graft together in various places; and so where two branches of a tree lie in close contact, the friction sometimes produces a wound or abrasion of the surfaces, and the juices that flow from the wounded parts gradually cause an incorporation of the substances, so that the two branches become united into one. This is not to be wondered at, in different branches of the same tree; but it certainly does excite surprise, when we first become acquainted with the practice of grafting, to find that a tree bearing small and unpalatable fruit may be cut down, and the remaining part grafted with a scion from a species bearing large and delicious fruit, and that this scion will flourish and become a tree, producing, not the sour offspring of the stock with which it is now amalgamated, but the same kind of fruit in every respect as the tree from which it was taken.

By grafting we may preserve and multiply approved varieties of trees, which could not be propagated from seed with any certainty of success: we may hasten the maturity of the tree, tending to produce fruit instead of vigorous growth: and we may increase the quantity of fruit; while we confine the size of the tree within certain limits. In the case of choice descriptions of fruit, as well as in many varieties of ornamental plants, it is highly advantageous to be able thus to procure, it may be, hundreds of grafts which can all be made to possess the properties of individual trees during one season. The precarious nature of the multiplication by seeds, and the disposition there is in cultivated plants to return to their original wild state, are sufficient reasons for the universal practice of this safer method of propagation. By grafting we obtain the peculiar flavour and richness of a particular fruit, or the delicate tint of an admired flower, perpetuated in a continued series of individuals, without change or deterioration.

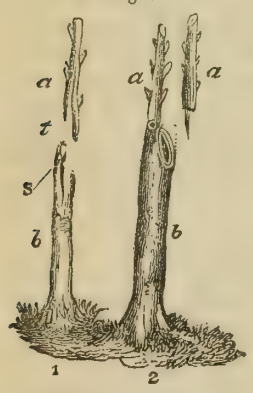
In order to the full success of the operation, grafting must be performed according to the rules that experience has laid down. The first of these is, to graft or unite only such species as have a near relationship subsisting between them. The operation never succeeds unless this union of natures is attended to, and the plants belong to the same genus, or at least to allied genera of the same family. This is a rule which repeated experiments have confirmed, and yet we find the ancients to have been unacquainted with it. They considered it possible to graft any two plants together, and Pliny records a marvellous instance of a grafted tree bearing a variety of different fruits which he himself saw. This can only be explained by supposing him to have been the subject of an imposition still said to be common in Italy. This is a process called by a French writer, "greffe des charlatans," (rogues' graft,) and consists in cutting down an orange-tree nearly to the ground, and then hollowing out the stump and planting within it several young trees of different species and families. In the course of a few years the young trees grow up so as entirely to fill the cavity, and to appear to a casual observer as if blended and grafted into a single stem. Thus they make an olive, a jasmine, a

rose, and a pomegranate, all seem to grow in harmony upon the stock of the orange, and the deception is rendered still more perfect when they leave a few buds upon the stump to keep this alive also. Some of the ancient writers even speak of apples and vines grafted on elms and poplars, though they acknowledge that such grafts were of short duration. Among modern writers, Evelyn mentions seeing a rose grafted upon an orange-tree in Holland, and at the present period, we occasionally hear it spoken of as practicable to graft a rose upon a black currant, and thereby produce black roses. Whatever attempts may be made to produce unnatural unions of this sort, the success will be very short-lived, and all the grafts will perish sooner or later.

The second rule to be attended to is to observe the analogies of trees, as to the quality of the fruit, permanence, or otherwise, of the leaves, rising of the sap, &c., in order to estimate the probable advantage of grafting a fruit of any particular flavour on another of similar or different quality. When the stock is of slower growth than the scion, the over-luxuriance of the latter is checked; the juices are rendered less abundant, and the disposition to bear fruit is induced at an earlier age. But when the graft is of a weak species, and requires to be invigorated, this may be accomplished by uniting it with a stock which is of stronger growth.

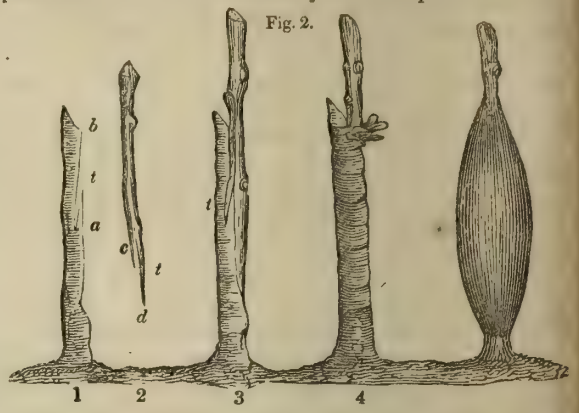
The next rule requires that the inner bark of the scion and the inner bark of the stock be exactly united together, in order to facilitate the free course of the sap. This leads us to notice the most common method of grafting, called whip, or tongue-grafting. The name is given from the method of cutting the stock and the scion, sloping on one side, so as to fit each other, and then tying them together in the manner of a whip-thong to the shaft or handle. The scion *a* and the stock *b*, as represented at fig. 1, are cut obliquely, and as nearly as possible at corresponding angles. The tip of the stock is then cut off nearly horizontally, and a slit is made near the centre of the stock downwards, *s*, and a similar one in the scion upwards. The tongue, *t*, or wedge-like process, forming the upper part of the sloping face of the scion, is then inserted downwards in the cleft of the stock; the inner barks being brought closely to unite on one side, so as not to be displaced by tying, which ought to be done immediately with a riband of matting, or *bass*, brought in a neat manner several times round the stock. The next operation is to clay the whole over, an inch thick on every side, from about half an inch or more below the bottom of the graft, to an inch over the top of the stock, finishing the coat of clay in a kind of oval globular form, closing it effectually, so that no light, wet, nor wind may penetrate.

Fig. 1.



Tongue-grafting is not materially different from whip-grafting, but by comparing the following directions, in connection with those given above, any difficulties which may appear to attend this operation will doubtless be removed. The stock being ready, cut it off at three or four inches from the ground, and with a very sharp, straight, and narrow-bladed grafting-knife, cut a thin slip of wood and bark upward, from about two inches below the top of the shortened stock. Make this cut at one pull of the knife, inserting the edge rather horizontally, and when it has gone through the bark, and into the wood a little short of the middle, pull straight upwards (see Fig. 2, No. 1, *a*, *b*.) Then, at less than half-way down this, cut a thin tongue (1, *t*,) not more than three-eighths of an inch long. Proceed in the same way with the bottom part of the scion; make a sloping cut (2, *c*, *d*,) of about the same length as the cut in the stock; then make a tongue (2, *t*,) to correspond with that of the stock (1, *t*), but cut upward instead of downward. Then place the scion upon the stock, inserting the tongue of the scion into the tongue of the stock. Bring the four edges of the bark,—that is, the two edges of the cut in the top of the stock, and the two corresponding edges of the cut in the bottom of the scion, to meet precisely; or, if the scion be in diameter a smaller piece of wood than the stock, then let only one meet, but be sure that that one meets precisely. But observe well that this can never be, unless the first cut in the stock and that in the scion be as even as a die, and performed with a knife scarcely less sharp than a razor.

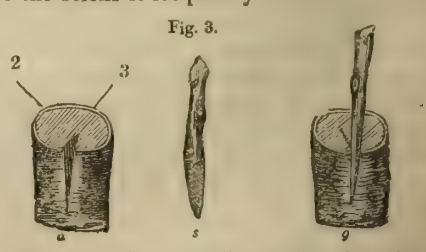
Fig. 2.



The two parts thus joined, the tongues and the stock clasping one another, as at No. 3, *t*, must be bound closely to one another by bass. A single piece of this, tied on to the stock an inch or so below the part grafted, and then wound closely up till it reach the very top of the stock, will, if well done, almost ensure the junction; but, lest parching winds should come, and knit up all vegetation, it is usual to put on, besides the matting, a ball of well-beaten clay, sprinkled over with a little wood-ashes, so as to cover the parts grafted, from an inch below to an inch above them. To prevent this ball of clay from being washed off by heavy rains, a covering of coarse canvass is sometimes tied over it.

Cleft-grafting is practised extensively by cottagers, who frequently insert from twenty to sixty scions into one tree. The head of the stock or branch to be grafted is sawn off, (fig. 3, *a*,) and the stump or limb is split with a strong knife and hammer, or even with a bill-hook in the absence of a more refined tool; the graft is then cut into a sort of blade, *s*, two inches in length; the split is forced open with a chisel, and the scion passed into the cleft, (*g*). When the chisel is withdrawn the stock closes firmly on the graft, the limb is tied round with soft string, and the stock and graft are clayed over, as in the case of whip-grafting. Sometimes two or three scions are inserted into one stock as indicated by the lines marked, 2, 3, in our engraving. The objections to this mode of grafting, are, that the stock or branch is left long uncovered, and where it is split to introduce the scions it frequently becomes unsound.

Fig. 3.



The other methods of grafting, with the subsequent treatment of grafted trees, will form the subject of a second notice.

RURAL ECONOMY FOR THE MONTHS.

III.

MARCH.

But though our ever-varying sky
Will oft the weatherwise defy,
Exact the future change to know;
Oft too its general state will show
That not impertinent or vain
Is many an old prophetic strain
Of sage experience; and 'tis true,
That March will oft at first indue
The lion's untam'd form, and pour
Abroad the blustering tempest's roar,
Which join'd with "April's" genial "showers"
Will fill "May's" lap with blooming "flowers."

MANT'S *Months.*

FICKLE as our seasons are, we have generally a sufficient proportion of boisterous weather during the month of March to justify the old sayings respecting it, and to remind us of the homely proverb of our forefathers,

Which mark'd its entrance fierce and wild
In contrast with its exit mild,
And told how March to meet them came
"A lion," but retir'd "a lamb."

Regulated by the state of the weather, the numerous employments of the farmer now proceed at a brisk rate. Previous to entering on the details of agricultural operations, it is necessary to remark that some of those we shall describe have been carried on during the latter part of the last month in warm districts, but that the present may be looked upon as the prevailing season for the labours to which we give prominent attention.

First, then, let us consider the operation of barley sowing, which may be looked upon as next in importance to wheat sowing. Among the cereal grains cultivated in Great Britain, barley holds the second place, and though its use as bread-corn has greatly diminished amongst us, the demand for it, as a means of producing stimulating beverages has more than compensated for the deficiency. This grain is more cultivated than any other, in Sweden and Norway, where the short summers do not admit of the ripening of wheat, but are quite long enough for the perfection of a crop which requires so short a time in the soil as barley. The agriculturists of Spain and Sicily get two crops in the year, from the same soil, one being sown in autumn and reaped in May, the other sown in May and reaped in autumn. Barley may be propagated over a much wider range of soil than wheat, and has the superior advantages of growing upon light soils, and coming quickly to maturity. Yet in Britain this crop is extremely liable to injury on account of the large proportion of wet weather, to which our climate is subject. A heavy shower, falling at seed time, will almost ruin a crop; and long continued rain, in any stage of its growth, is particularly hurtful.

There are six species and sub-species of barley in cultivation, besides varieties; but we shall merely notice the four sorts that are most generally known. Spring barley (*Hordeum vulgare,*) is the most usually cultivated in the southern and eastern districts of England. It may be known by its double row of erect beards or awns, and also by its thin husk which makes it valuable to the maltster. Winter, or square barley, (*Hordeum hexastichon,*) is much grown in the northern counties, and in Scotland. The grains are large and thick-skinned, and disposed in six rows. This species is very hardy, but, on account of its thick rind, it is ill adapted for malting. A variety of this is called *Bigg*, *Byg*, or *Barley-big*. It is earlier than the parent variety, and has the grains smaller, and thickly arranged in six rows. Professor Martyn says he has frequently counted forty-two grains in one ear of bigg, when common, or long-eared barley, had only twenty-two. Common, or long-eared barley, (*Hordeum distichon,*) is known by its very long flattened spike or ear, with chaff ending in an awn, sixteen times the length of the grain. The husk of the grain is thin, and its malting qualities are excellent. This species is partially cultivated throughout England and Scotland, but is objected to by some on account of the weight of the ear, which makes it liable to lodge. Sprat, or battledore barley, (*Hordeum zeocriton,*) is known by its low stature, coarse straw, and short broad ears, with long awns. The length of the awns and the crowded growth of the grains, form a protection from the attacks of birds; but as the straw is scanty and but of little use, this kind is not so much cultivated as either of the before named. Other varieties of barley are known as Thanet barley, Putney barley, and Chevalier barley, which at present is in high repute. In choosing grain for sowing, the farmer is careful to select that which is of a pale, but lively yellow colour with a whitish cast, and if the rind be slightly shrivelled, he is all the better pleased, as it is a proof that the barley is thin skinned; whereas if the skin were thick the grain might look smooth and full on the outside, while the flour had shrunk away from it within. With barley, as with other grain, it is quite necessary to change the seed from time to time, by sowing the growth of a different soil, otherwise the produce will deteriorate every year. Barley prospers best in a light, rich, finely pulverised loam: it generally follows turnips, and is often sown after wheat or oats. According to Brown, when sown after turnips it is generally taken with one furrow, which is given as fast as the turnips are consumed, the ground thus receiving much benefit from spring frosts. But often two or more furrows are necessary for the fields last consumed, because when a spring drought sets in, the surface, from being poached by the removal or consumption of the crop, gets so hardened as to render a greater quantity of ploughing, harrowing, and rolling necessary than would otherwise be called for. When barley succeeds beans or peas, one winter and one spring ploughing are usually bestowed upon the soil, but when it follows wheat or oats, three ploughings are necessary to bring the land into proper condition. These operations can seldom be carried on in a wet or backward season, so as to repay the cultivator for the expense of labour.

Barley occupies the soil but a short time, therefore manure can seldom be given with advantage, and the seed is generally sown on ground that has been previouly enriched by some other crop. A common method of preparing the seed is by simply steeping it in water. For this purpose one third of the contents of the sacks is taken out, to allow for the swelling of the grain, and the sacks with the grain are then laid under water for twenty-four hours, or if the weather be very dry, for thirty-six hours. The grain is then sown wet from steeping, and is found to scatter well, as clean water does not render it tenacious. A third or fourth more seed is allowed than in the case of dry grain, to make up for the proportionate swelling of the barley. The quantity of seed allowed to an acre is different according to the soil. Upon the ordinary run of lands, about one sack per acre is the usual quantity, on poor lands considerably more, while on very rich soils, eight pecks per acre has been found sufficient. When barley is sown broad-cast, grass seeds and clover are sown with the grain. It is, however, sometimes sown in rows by the drill, or by *ribbing*. This latter process is a kind of imperfect ploughing, which was formerly adopted in autumn, on land intended for barley; but as it is liable to many objections, it has gradually fallen into disuse, and when it is now resorted to, it is employed as a substitute for the drill after the spring ploughings.

It appears that those who have been the most successful cultivators of barley, in days gone by, have paid particular attention to the budding of trees, and have regulated the time of sowing chiefly by that circumstance. Thus the Norfolk farmers had a maxim, handed down from father to son:—

When the oak puts on his gosling grey,
'Tis time to sow barley night and day.

And as the grey appearance given to the oak by the

first opening of the buds, was a sign to these agriculturists, so the leafing of the birch is the token to the Swedish farmers, that it is the right season to begin their labours; and various signs of a similar nature are attended to in every country by the diligent observer of Nature. It has been urged that a farmer who would keep a calendar of nature for a few years, and at the same time register his days of sowing and the issue of his harvests, would secure an excellent set of rules for his guidance, applicable to the exact circumstances of situation and soil in which he is placed. The practice of very early sowing has been of late years resorted to.

The middle of this month is the season preferred by most farmers for sowing oats. This grain is of easier cultivation than barley, and will grow on almost any soil, and in situations where neither wheat nor barley can be raised. Cool and moist climates are most suitable for its growth, and its hardy nature makes it very serviceable to man. It was formerly used in this country as bread-corn, but now acquires its importance as food for horses.

The varieties of this grain are numerous. The most esteemed in Great Britain is the potato oat, so called from the first plants having been found growing on a heap of manure along with potato plants. This and the Poland oat are best adapted for lowlands; the white or common oat, and the Tartar or long bearded oat, for inferior soils. Oats are sown broad-cast in the proportion of from four to six bushels per acre. The crop is best in quantity and quality when it succeeds grass, and the soil is then left in good condition for succeeding crops. There is no preparation of the seed required previous to sowing oats; but the grain selected should be fresh, plump, and free from the seeds of weeds.

Field peas are also sown at this time. They may be considered, in common with all leguminous plants, as exhausting the soil less than other crops, and thus possessing an advantage in addition to the quantity of nourishing food they afford. They form a complete shade for the land, and drop many of their leaves upon it; they are also considered by the scientific agriculturist to nourish the soil by causing a stagnation of carbonic acid gas on its surface. The varieties of this vegetable are many; but these, with its growth and culture, are well known.

A more important and equally familiar vegetable has also to be committed to the earth during this month. From the middle to the end of March is the proper season for planting the early crop of potatoes, and there is this peculiar advantage attending their culture, *i. e.*, that an almost unlimited supply may be raised, without diminishing the breadth of our corn-lands. The potato thrives well where it would be impossible to raise corn; so that ground which seems little else than loose sand, will often yield this vegetable in perfection. In some of the hilly districts of Scotland, the rains are so frequent in all seasons of the year, that their cessation for a whole week is looked upon as something extraordinary. In these situations, so peculiarly unfavourable to all other crops, the potato succeeds well, and forms an important resource to the inhabitants.

Potatoes are planted either whole, or divided into as many parts as there are *sets*, or eyes. They are planted in lines from twenty to twenty-four inches apart, either in drills, or by the dibble, at intervals of from twelve to fifteen inches. From eighteen to twenty-eight bushels of seed potatoes are allowed to the acre. Nothing more is required for their culture than to keep them free from weeds and to hoe up the earth round the lower part of the stem when they are about a foot high. No plant profits more by change from one district to another than the potato; and thus, though by the planting of the tubers no new varieties can be obtained, yet a good sort of potato may be extended, preserved, and still farther improved. A frequent change of the product of one soil for that of another has also been found the means of preventing a destructive disease to which the potato plant is liable, known by the technical name of the *curl* or *curl top*, from the shrivelled appearance it gives to the plant. It has been found, however, that over-ripeness in the seed-potatoes is a principal cause of this disease, and it seldom happens that with attention to change of soil, and with care that the seed be not fully ripe, a crop of potatoes is infested with it.

When we consider the productiveness of the potato, and the circumstances attending its growth and culture, we have every reason to be thankful for its introduction, as affording one of the cheapest articles of substantial food, which a population can use. With respect to the produce and nourishment afforded by it, in comparison with that afforded by wheat, we have some interesting statements in JACOB'S *Tracts on the Corn Trade*; by which it appears that an acre of land with the same degree of labour bestowed upon it, and the same proportion of manure applied to it, may yield either three hundred bushels of potatoes, or twenty-four bushels of wheat. The food produced by the former at thirty-eight pounds to the bushel will be 11,400 lbs. in weight; the food from the latter, at sixty pounds to the bushel, will be 1400 lbs., making the weight of the wheat to be one-eighth that of the potatoes. Now the chemical experiments of Sir Humphrey Davy show that wheat contains about three times the quantity of mucilage or starch, and of gluten or albumen, of what is contained in a like quantity of potatoes. The difficulty of estimating the nutritive power of the two substances is not wholly removed by this appeal to chemistry, because we are still ignorant of the effect which the combination of the saccharine matter with the mucilage and gluten may produce, when used as aliment. A small addition of the former to the two latter may communicate to the whole mass a degree of nutritive power very far exceeding its own separate proportion of weight: without being far from the truth we may probably estimate the nutritive power of wheat to that of potatoes as about seven is to two; or that two pounds of wheat afford as much subsistence as seven pounds of potatoes. Assuming then that the consumption of an individual is yearly one quarter, or 480 lbs. of wheat, or an equivalent quantity of potatoes, being 1680 lbs., then one acre of wheat will produce sustenance for three persons, or one acre of potatoes will afford it to nearly seven persons.

The sower has not finished his labours during this month when he has attended to the crops already spoken of. There are carrot, parsnep, and grass seeds to be committed to the earth; but these, with the processes connected with them, we cannot here enlarge upon. This is in an especial manner the seed-time of the year, and therefore it is a season of hope and expectation. The labour connected with the farming operations of the month is enlivened by the thought of the future recompense. Happy are they who in this, as in every other concern, having done their utmost in the way of industry and duty, can calmly leave the result to the Disposer of all events, and though their faith be tried by "unkind seasons" and inauspicious weather, can check the murmurings of impatience and despondency, and believe that all will yet be well. Having diligently embraced every opportunity afforded to them, such persons will be ready to join in the language of the poet, and say:—

> Man's work is done. ALL BOUNTEOUS POWER!
> 'Tis now for Thee the genial hour
> To regulate; for Thee to rear
> The germ, the blade, the pregnant ear,
> Last on the ear the full-grown grain,
> Each in its kind: erect to train
> The bristling barley, give the oat
> Light on the buoyant air to float,
> Abroad the winding pea to trail,
> And bid the blossomed bean exhale

Delightful fragrance! By Thy care
The verdant fields already wear,
Their mantle of the sprouting wheat,
Unhurt by winter. Oh, complete
The boon! To meet perfection bring
The promise of the opening spring
That hill and joyous vale may smile
With fruitfulness, and man the while
Earth's kindly fruits receiving, own
The welcome gift is Thine alone.

ON THE ORIGIN OF THE TERM MOSAIC AS APPLIED TO WORKS OF ART.

In our late notice of Mosaic work, we remarked that critics are divided in opinion as to the origin and meaning of the term by which this branch of art is distinguished. We have since been favoured with a communication from Thomas Windus, Esq., F.S.A., containing his own view of the origin of this term, which we have much pleasure in laying before our readers.

The proposition of this gentleman is, that the expression *mosaic* had its origin in the work which Moses the Lawgiver was commanded by the Lord to make for Aaron the High Priest, viz., the breastplate of judgment to go on the ephod, which was to have four settings of stones,

1st, a Sardius, a Topaz, a Carbuncle.
2nd, an Emerald, a Sapphire, a Diamond.
3rd, a Ligure, an Agate, an Amethyst,
4th, a Beryl, an Onyx, a Jasper.

These stones were to be "set in inclosings of gold" with the names of the twelve children of Israel, "like the engravings of a signet." (Exodus, xxviii.)

Our correspondent remarks on the similarity of the work of Moses to that which has since been called mosaic work; and finds in the use of the term another instance of the derivation of expression and allegories from Holy Writ, of which, in the course of his researches he has met with frequent examples.

Mr. Windus speaks of the Alto Florentine Mosaic, which chiefly consists of the imitation of flowers, fruit, &c., in very high relief, as coming nearest to the Levitical; and gives a description of an elegant specimen of this kind, executed by a countryman of our own, a sculptor, one of the talented family of the Wyatts. It was undertaken at the request of the late Lord Dudley and Ward, but was not quite completed at the time of that nobleman's decease.

The subject is a fine Newfoundland Dog, a constant companion of the noble Lord, even to the drawing room. It is executed in black and white marble, and is so admirably and freely chiselled as to deceive the eye at a short distance, and give the idea of life and animation. The Dog is standing on a plinth of black marble, around which are sculptured, with great truth and beauty, festoons of alto mosaic fruit, composed of agates and precious stones. Plums and clusters of grapes are composed of amethysts; Muscat grapes, of adularia or moonstones; cherries are represented by rubies and carbuncles; currants by carnelian, and so on, with other kinds of fruit. 'Upon the whole," says Mr. Windus, "it is a complete master-piece, and I feel no small pleasure in referring to it, as the production of British talent."

A little thought will sometimes prevent you from being discontented at not meeting with the gratitude you have expected. If you were only to measure your expectations of gratitude by the extent of benevolence which you have expended, you would seldom have occasion to call people ungrateful. But many persons are in the habit of giving such a factitious value to any services which they may render, that there is but little chance of their being contented with what they are likely to get in return, which, however, may be quite as much as they deserve. Besides, it is a common thing for people to expect from gratitude what affection alone can give.—Anon.

THE BRANDY PEST.

No. V.

The attempted Temperance Society.

Walter did not appear the next morning till late. "Excuse me, dear friend," said he, when he entered into my room, with papers in his hand, "now we can talk together without being disturbed. I have visited my patients, and finished my other business; now let us sit down, and I will fulfil the promise I gave you yesterday. The narration will not be very long, yet it will be worth while to listen to it.

"The terrible end of old Mr. Thaly, and the sudden death of my father, made, as I told you, a great impression upon the inhabitants of our village. People knew very well the true cause of both events. But, as it generally happens, they spoke of it till the sorrowful history became old and nearly disregarded. I did not, however, wish it to fall into oblivion, but was anxious to turn my misfortunes to the benefit of others, and thus to place the finest monument upon my father's grave. I tried to banish the daily use of spirituous liquors, by the means with which I had become acquainted during my stay in England. At first I tried to induce the most generous, well-wishing, men, to commence with their own example, and to win others by their persuasion. They all agreed with me, wished with all their hearts to assist me, but found the undertaking very difficult. I invited them to a serious consideration of the affair in a friendly meeting.

"After a long discussion about the means of eradicating brandy-drinking, and re-establishing industry, and morality, and of preventing many unhappy accidents, the effects of intoxication, we did not advance one step.

"'Such things must be effected by the government, by good laws,' said the young lawyer. 'As long as the number of brandy-distillers and of liquor-shops is not diminished, and the importation of foreign spirits is not prohibited, the matter must rest in our good wishes. Brandy is too cheap; the government ought to put heavy taxes upon it.'

"'You are perfectly right,' said the justice of the peace; 'it is a luxury, but do you think that luxury ceases when heavy taxes are laid upon it? What is the use of prohibiting inns to notorious drunkards? The manners and wants of a country make the law; the law makes not the manners and wants. If ever improvement is to be expected, it must be from the efforts of the teachers of the community.'

"Here the clergyman shook his gray head with sadness, and said, 'I have preached the word of God for thirty-six years; I have visited the sufferer, the sick, and the dying. How little is the fruit in the vineyard of the Lord! They come to church from habit, for convenience, from curiosity, hypocrisy, or perhaps from a transient impulse of piety. But as soon as they have left the church, they forget the admonitions and instructions of the preacher, and run into the inns. Quite different means must be employed, and the first step should be, for all our rich tradesmen and manufacturers to refuse employment to a single brandy-drinker.'

"'Here the cotton manufacturer rubbed his forehead, and exclaimed, 'Very well said, but we manufacturers pay with our money only for the work, not for the virtue nor the piety, of the workman. It is the same with you; when the shoemaker makes shoes for you, you pay for the leather and the work, and look only at the shoemaker's skill, and not at his domestic life. We manufacturers depend upon our workmen as much as they depend upon us. We have no command over them out of our houses. You might as well require the government not to employ officers who drink liquors. I do not deny that the use of brandy has destroyed the health and happiness of millions, and will continue to destroy them as long as it is taken. But we manufacturers cannot take care of the health of our workmen; I think that is rather the business of the physician.'

"At these words the old doctor laughed loud and said:—'We Swiss have always many *buts* and *ifs*, and a thousand scruples at hand, when we ought to act. Now, gentlemen, you know, that the physician visits only those houses, to which he is called in professionally, and that he ceases to return thither, as soon as his patient is either cured or dead. We cannot watch whether the persons follow our advice or not. Poor families seldom call for the physician, or only when it is too late; they rather go to a quack, or to an old woman; and when I visit wealthy and rich people, how they would laugh at me, if I were to preach to them about giving

up dram-drinking! Would you, gentlemen, have ceased from setting strong liquors before your guests at meals, if I had described to you their injury to the health? I doubt it.

"'I have often thought,' continued the old man, 'we ought to introduce, in our country, Temperance Societies, like those of England and America. But when I imagine the uproar of all brandy-distillers, dealers in liquors, tavern-keepers, wine-merchants; when I think of all the thirsty souls, who fancy they could not live, could not enjoy their life, could have no strength for work, without brandy, then all my courage sinks: I see it would not do. And yet *we* want a remedy, as well as they do in England or America. In our village, with its nine hundred inhabitants, they drink brandy in nearly every house, more or less. In poor families not only the grown-up men drink it, but also the women and girls. Boys of ten years of age believe themselves heroes, if they can smoke a pipe and drink at once a glass of brandy, without making wry faces. Yes, there are even brutish mothers, who give brandy to their infants, and enjoy seeing them tipsy. Although they may be in want of money, they are never in want of brandy; they will rather go in rags than go without their dram. If they have nothing more to pawn, they at last beg.'

They form a Temperance Society.

"So spoke the experienced old man. After him I took up the conversation because the others were silent, and said, 'I think the speech of our most worthy friend has made us serious. Unfortunately, what he has spoken is the truth; why should we not remedy the mischief at the right time, and thus prevent its becoming worse? I myself am of opinion that a Temperance Society is the best means of reforming the evil. It has been said that the establishment of such a Society is impossible for our community. But where are the proofs? We have not yet made an attempt. There may be many difficulties, but why should it be impossible to carry out in Switzerland that which is already carried out with the best success in America, England, Ireland, Sweden, Saxony, nay, even in some parts of Russia? Are we less patriotic, less disinterested, less virtuous, than the Russians, the English, or the Americans?

"'In America the first Temperance Society was founded at Boston, in the year 1813, by some virtuous fathers of families. Their first aim was only to prevent people from drinking *too much*. But the habitual use of brandy is necessarily an abuse; experience has shown it; the Society improved nothing, and during twelve or thirteen years all their trouble was in vain.

"'In England, among the members of Temperance Societies, are many physicians and surgeons, as well as nobles, judges, and bishops. Should we not yield to such authority? The reform of national habits must be effected by the nation. What is the use of all our political, patriotic, philanthropic societies? We write a number of newspapers, we improve the schools, we distribute cheap books among the people,—and all this in vain. Our schools, our philanthropic and mental improvement societies, our mechanic and literary institutions, are good for nothing, if we do not abolish the use of brandy. For he who wishes to improve the people must not allow the heart and mind to be weakened and degraded by debauchery.'

Here I was silent. My words were not without effect.

"'Very well said, colleague,' cried the old doctor; 'I wish it were as well practised. But there is the difficulty! You are young; old age has made me more scrupulous. I believe that we Swiss are neither better nor worse than the English, Russians, or Americans. But our people are not so easily moved. What they have adopted as a habit and custom, that they keep firmly, and cannot be induced to desist from, either by kindness or force, be it good or bad. I ask you, who would begin the abolition of brandy in our village, with its dozen of taverns and brandy-shops, and with all its drunkards?'

"This question came not unexpectedly to me.

"I answered it thus: 'I would proceed in quite a simple manner, and not as they usually do. Do you think I would begin with the drunkards or the dealers in brandy? No. I would begin with honest, moderate persons, who would have no difficulty in abolishing brandy from their houses. For instance, gentlemen, I will sign with *you* an agreement that *we* will drink no more brandy; and we will endeavour to persuade our friends to sign the same. Would this be so difficult?'

"Our cotton-manufacturer said, 'Oh, not at all; I myself like neither brandy nor any other liquor. But why should I become a member of a Temperance Society? It would be ridiculous.'

"The clergyman answered, 'My dear Mr. Maier, I know well that in few houses such moderation exists as in your's. You are also a true friend of your native country; nobody doubts it; but what would you answer to a person who should say to you, "I am, with all my heart, a true friend to my country, and would sacrifice my fortune and my blood for it; therefore, I do not want to unite myself with the friends of my country?" Or what would you answer to him who, in a fire, should say to you, "I like my fellow townsmen very much, but my house is not yet in danger of being burned down, therefore I do not want to assist others." The uniting of moderate and honest persons for the establishment of a Temperance Society is necessary, not for themselves, but for the welfare of others.'

"Mr. Maier was convinced, and replied,—'You are quite right, sir; it is the duty of good citizens to form such a Society; and certainly this Society must be formed by the sober and moderate persons, and not by the drunkards.'

"The lawyer exclaimed, 'Let it be so. I am of your party. Let us join hand in hand. There are half-a-dozen of us here, and that is quite enough to commence the Society.'

"We gave each other our hands. The Society was formed.

"The laws of this Society were then discussed. They are simple. I had planned them after those of England and America, with the exception of a few adaptations to our circumstances. They are as follow:—

"'We the undersigned, who have been taught and convinced by many calamities, that the vice of drunkenness is one of the most detestable before God and man, and that moreover the use of every kind of spirits, whatever may be its name, is detrimental to health, destructive to body and soul, and promotive of idleness and lust, poverty, strife, and quarrelling, and frequently an incentive to the greatest crimes, have, with our families, solemnly bound ourselves in a Christian Temperance Society, and promise before God, and in presence of our fellow-men, faithfully and conscientiously to keep the following engagements.

"'Art. I. We promise henceforth, not to drink any kind of distilled liquors, not to allow them to our wives and children, not to offer them to our friends, not to give them to our servants and day-labourers, and not to carry on any commerce in them, but, on the contrary, as far as we are able, to induce our friends and acquaintances, entirely to refrain from these poisonous drinks.

"'Art. II. We promise henceforth never to remain in company with any notorious drunkard, be it in inns or other public places; and to leave immediately the place where any one has lost his understanding through intoxication.

"'Art. III. We empower the Christian Temperance Society to expel us if we do not keep the above promises, and to denounce us in our public assemblies as men who have broken their faith.

"'Art. IV. A meeting of this Society shall be held once a year, in which a President and Secretary, and a Committee of nine members shall be chosen for the direction of the affairs of the Society, and in which a detailed account of its progress shall be given.

"'Art. V. Whoever may desire to do so, can on any day become member of this Society, by inscribing his name in presence of the President or the Secretary.'"

Affliction is the wholesome soil of virtue, where patience, honor, humanity, and fortitude take root and strongly flourish.—Mallet.

The good meaner hath two tongues, the hypocrite a double tongue. The good man's heart speaks without his tongue, the hypocrite's tongue without his heart. The good man hath oftentimes God in his heart, when in his mouth there is no God mentioned; the hypocrite hath God often in his mouth, when the fool hath said in his heart *There is no God.* I may soonest hear the tongue, but safest the heart; the tongue speaketh loudest, but the heart truest.

LONDON:
JOHN WILLIAM PARKER, WEST STRAND.
Published in Weekly Numbers, price One Penny, and in Monthly Parts, price Sixpence.
Sold by all Booksellers and Newsvenders in the Kingdom.

THE

Saturday Magazine.

No. 625. SUPPLEMENT, MARCH, 1842. { PRICE ONE PENNY.

A BRIEF HISTORY OF THE FINE ARTS. No. IV.

THE COTTAGE GIRL. FROM A PICTURE BY GAINSBOROUGH.

A BRIEF HISTORY OF THE FINE ARTS. No. IV.

SKETCH OF THE PROGRESS OF MODERN PAINTING.

Ecstatic she diffused
The canvass, seized the pallet, with quick hand
The colours brew'd: and on the void expanse
Her gay creation pour'd, her mimic world.
Poor was the manner of her eldest race,
Barren and dry; just struggling from the taste,
That had for ages scared in cloisters dim
The superstitious herd: yet glorious then
Were deem'd their works; where undeveloped lay
The future wonders that enrich'd mankind,
And a new light and grace o'er Europe cast.
Arts gradual gather streams. Enlarging this,
To each his portion of her various gifts
The goddess dealt, to none indulging all;
No, not to Raphael. At kind distance still
Perfection stands, like Happiness, to tempt
The eternal chase. In elegant design,
Improving nature: in ideas fair,
Or great, extracted from the fine antique;
In attitude, expression, airs divine;
The sons of Rome and Florence bore the prize
To those of Venice she the magic art
Of colours melting into colours gave
Theirs too it was by one embracing mass
Of light and shade, that settles round the whole,
Or varies tremulous from part to part,
O'er all a binding harmony to throw,
To raise the picture, and repose the sight.
The Lombard school, succeeding, mingled both.—THOMSON.

INTRODUCTION.

IN presenting to our readers a general view of modern painting, we must commence our narration by adverting to that period marked by the decay of every liberal art, and the general neglect of literature, which immediately preceded the division of the Roman empire; for it is by contemplating the corruption of all taste, and the strange mingling together of Roman, Greek, and Oriental art, prevalent in that dark age, that we learn to make due allowance for the gross or feeble attempts of early artists in the Christian era. And how could art flourish where tyranny, vice, and civil war, alternately reigned? Of forty emperors, who from the second to the fourth century had struggled for and obtained the diadem, twenty had been murdered by the army and the people; so that the removal of the seat of empire by Constantine only completed that destruction of the art in Italy, which numerous causes had long combined to effect.

Yet it is also to the age of Constantine, when Christianity became the religion of the state, that we must look for those feeble glimmerings which announce the dawn of modern art. It is not surprising that there should have existed among the early Christians a certain degree of repugnance to the practice of the arts, bound up as they long had been with the emblems of heathen worship. The moral feeling of the people had taken a decided turn with regard to painting and sculpture, so that images and pictures were admitted with caution, and carefully separated from all connexion with religious worship. But in the time of Constantine, when Christianity was, as it were, grafted on Paganism, and everything was done to moderate the prejudices of the heathen world, and to bring them to tolerate, if not to conform to, the practices connected with the Christian religion, splendid commissions were given by the emperor to Greek and native artists for pictures of Christ, the Virgin, the prophets and the apostles. "But what were the results," it has been asked, "to painting? Nothing, absolutely nothing, to guide anybody except the antiquary; and if any evidence were wanting to show that the genius and the patron must exist together, the end of Constantine's splendour would abundantly supply it." The peculiar state of feeling at this period greatly shackled the artists in their task. The early Fathers, fearful of producing unnecessary collision with the pagans, who had been used to all the beauties of Grecian art, were reluctant to exhibit the representation of a suffering Saviour, and a painful cross, and therefore employed allegory largely in their paintings. There was also much diversity of opinion as to the method of representing the person of Christ. The Greeks always aimed at beauty, but the Fathers of the Church preferred a representation of agony and suffering. The paintings, in whatever style, could not justly claim any merit as being portraits of our blessed Saviour, for St. Augustin declares, that in his time no faces of Christ or of the Virgin were known, and that no pictures were painted of them before the Council of Ephesus. Nevertheless, there are seven pictures now in Rome, reported to be originals, four of which are said to be by St. Luke's own hand.

Thus art had been kept alive by the Christian church, though encumbered with much barbarism, and it is found that native painters had sprung up in different parts of France and Germany. "Though darkened," says Dr. Memes, "the human spirit was still at work; and when at length its energies were restored to comparative activity by the slow operation of causes, imperceptible in themselves, mighty in their results, the arts shone forth among the morning stars in the dawn of freedom." The illustrious Charlemagne did all in his power to raise the state of the arts in his time. He made it a law that churches should be adorned with paintings, and thus confirmed the practice which many popes in succession had rendered common. But Charlemagne sent his agents every year to see that the law was obeyed, for it was his object, beside the advancement of the art, to obliterate the remembrance of the splendid altars of the pagans, by still more magnificent Christian ornaments. Though painting suffered at the death of Charlemagne, yet it was still kept alive through the instrumentality of the monks and the bishops. Religious painters sprung up all over Europe, and even Dunstan, archbishop of Canterbury, is said to have been a "skilful painter." In the tenth century, tapestry, for a time, took the place of painting, though many painters are spoken of as living at that time. Strutt tells us, that historical commemorations were much employed in England, and the Duchess of Northumberland adorned Ely Cathedral with a series of pictures illustrating the deeds of her distinguished lord.

SECTION 1.

DECIDED SYMPTOMS OF THE REVIVAL OF PAINTING.

THE first decided symptoms of the revival of painting took place about the year 1066, when Greek artists were sent for to adorn several of the cities of Italy. Florence is generally considered the first of these cities that established a school for painting, though several writers make mention of a school for each of the fine arts, established at Pisa, as early as the eleventh century. Cimabue, a Florentine, early in the thirteenth century, caught the inspiration from the Greek artists employed by order of the magistracy, and soon equalled their works. He was both a painter and an architect, and though he originally studied under Greek artists, yet he soon departed from their manner. He began to study nature, and corrected the rectilinear forms of his design, gave expression to the heads, folded the drapery, and grouped his figures with considerable art. He did not excel in graceful subjects, such as madonnas and angels, but he succeeded admirably in heads full of character, especially those of old men. His pupil Giotto was even more successful. Giotto was a shepherd-boy; a sheep drawn by him from nature, on a stone, attracted the notice of Cimabue, and led him to take the boy to Florence, and give him instruction. Giotto soon surpassed his master. Through him symmetry became more chaste, designs more pleasing, and colour softer than before. One picture still bears the name of this artist. It is in the church of Santa Croce, and is a fine composition, though remarkable for the peculiar cast of the countenances in it. The god-son and pupil of Giotto also helped to adorn that edifice, while the works of Andrea di Cione, at once a painter, poet, and architect, were exhibited in the Campo Santo at Pisa, and in Santa Maria Novella. There is a remarkable picture still hanging up in the cathedral at Siena, representing in a number of small compartments the life of Christ. It was executed about the year 1308, by Duccio di Buoninsegna, and gives a high idea of the artist's powers. Petrarch speaks of Simone di Martino, or Memoni, a pupil of Giotto's, as being the rival of that master's fame. Orgagno, Uccello, Massolino, and others had their share of fame, but in the middle of the fifteenth century all former names were

forgotten in the merits of Massaccio. This artist died at the early age of twenty-four, but may be said to have created a new era in the history of modern art. "He gave to painting truth, expression, light, and shade." The Brancacci chapel, in the Carmelite church at Florence, still contains his frescoes, and will long be visited with interest on that account, and also as having been the early school of Da Vinci and Buonarotti. Massaccio had acquired perspective from Brunelleschi, and had long studied the remains of ancient sculpture at Rome. From his works it is evident that he had made a great advance in diversifying the positions and characters, and had paid more attention to anatomy than his predecessors. There is often an elegant and graceful expression about his heads, and considerable freedom and simplicity in the arrangement of his drapery. The colouring of his picture is also good, and exhibits truth, variety, and delicacy. About this time the resources of art were greatly increased by the discovery of oil painting, ascribed to Van Eyck, of Bruges, and also by the illusion of aërial perspective, added by Ghirlandajo.

These aids did not remain unimproved by artists of that period. Were we to give a list of the names of those who are spoken of as being eminent about the close of the fifteenth century, we should only weary our readers with a crowd of names that have long since given place to others of more importance to the art. Among the latter the name of Leonardo da Vinci stands deservedly high. This artist was born in 1452, and we cannot better describe him than in the words of Dr. Memes: "The genius of this extraordinary man seemed as a mirror, receiving and reflecting in added brightness every ray of intellectual light which had yet beamed upon the age. Philosopher, poet, artist, he anticipated the march of three centuries; proving in his own instance what the unshackled energies of man would then accomplish. Yet—and that too by a living historian of most deserved reputation—has Leonardo been represented as a dabbler in various knowledge, a proficient in none,—a laborious idler, wasting time and talent in useless multiplicity of pursuit. This apparently has been done to exalt his great contemporary and successor; but history ought not to be written as a picture is painted, touching in under-tones, that are deemed secondaries, that the light may be more conspicuously directed to a principal figure. At the shrine of art the devotion of Da Vinci was neither devoid of fervour nor unfruitful; albeit he courted, and not unsuccessfully, the favour of science, then new and dear to the aspiring mind. His true rank is not only among the fathers, but the masters of the art; he is one who not merely preceded, but excelled. His cartoon of horsemen in the battle of Pisa formed a favourite study of the greatest masters; and, in competition, Michael Angelo produced another of Soldiers arming in haste after Bathing; which even his admirers say, he scarcely ever equalled. Yet was Leonardo not vanquished. The Last Supper, painted in fresco at Milan, exhibited a dignity and propriety of expression, a correctness of drawing then unequalled; and, if seen as originally finished, probably still unsurpassed." In addition to his great attainments as an artist, Da Vinci was a discoverer in optics and mechanics, and a writer on scientific subjects. By his means the river Adda was rendered navigable for two hundred miles, and his hydraulic works on that river remain to the present day. He spent much time in scientific experiments, and in his writings he says, "Experiment is the interpreter of nature's secrets, and never misleads us. Our reason may sometimes deceive itself, therefore we must consult experience, and vary the circumstances in our experiments until we can draw from them general rules; for it is from hence only that these rules are to be derived." This artist died in France, in 1519.

Lorenzo da Credi was a fellow pupil with Da Vinci, and imitated his style. He painted with great tenderness and purity of feeling. The most successful imitator of Leonardo da Vinci is said to have been Bernardino Luini, his pupil.

We now come to notice the singular and wonderful genius of Michael Angelo Buonarotti, who united the professions of painter, sculptor, architect, poet, and musician. Of his attainments as a sculptor we have already spoken in our supplement on Sculpture*, and great as these may appear, they are not only equalled, but, in the opinion of many excelled by his powers in painting. Architecture and sculpture had formed his principal studies up to the period of his receiving orders to complete the paintings in the Sistine chapel at Rome. Comparatively ignorant of painting as a separate science, and wholly unacquainted with the mechanical processes, he formed the designs (which was an easy task to him), and entrusted the execution to artists procured from his native city of Florence. But their performance gave him so little satisfaction, that he dismissed them all, and "rising in the strength and perseverance of indomitable genius, he resolved to begin art anew, and to depend henceforth solely on his own resources." Michael Angelo shut himself up in the chapel, prepared the materials with his own hands, and after repeated trials and failures, which he endured with unconquerable patience, he finally triumphed, and achieved in the course of years, one of the most adventurous undertakings of modern art. To the same pen which has so ably sketched the artistic character of Da Vinci we are indebted for the following notice of Buonarotti's works and genius, and also for other judicious observations which will be found in the course of the following pages. "The walls and ceiling of the Sistine Chapel, with the picture of the Last Judgment, executed thirty years afterwards, form the principal, almost the sole, works of Michael Angelo in painting. The latter is the greatest work of modern art, being fifty feet high by forty wide, and containing upwards of three hundred figures, many of which are larger than life. Here the human form appears under every variety of position, and agitated by every gradation of feeling; and over the whole is diffused a living ease—a science—a magic power—a fascination which constrains us to gaze with wonder, astonishment, admiration, but not with interest or sympathy. Similar are our feelings in every other example; nor can this be exactly charged as a defect. Michael Angelo formed a system for himself—he stands alone in his art—an ideal abstraction of mind was the object of his imitation, to which all living nature, elevated into gigantic forms and energetic modes, was to be moulded in subserviency. His art was creative, not imitative—standing forth in its own independence of aim.

"Hence there are two relations in which the works in painting of Michael Angelo are to be examined, and according to which his merits will be very differently estimated. Viewed in themselves, the frescoes in the Vatican present astonishing evidence of human power. Every thought is grandeur and strength; and the rapid, fervent execution, arms the pencil with an omnipotence of art equal to all the modifications of form. Here the whole is perfect, inimitable; within this his own walk, Buonarotti has no compeer—'second to none, with nothing like to him.' But when the same works are considered with reference to the general principles of imitation, and as deriving value according as they reflect the archetypes of elevated nature, those very qualities which formerly constrained our approbation become startling blemishes. The ideal is found to consist solely in the imaginative; sublimity is sought too exclusively in the vehement to be always dignified. All is action—all participates of an unquiet and too aspiring character of composition; every form, every muscle, every attitude, exhibits the very gladiatorship of art,—for each is displayed, exerted, involved to the utmost. Even repose is anything save rest. Yet in difficulty apparently insurmountable, constraint is not perceived; the execution, wonderfully facile, though too prominent in general effect, gives to each giant limb of the awful and gloomy shapes the very effect of life and movement." Marcello Venusti, one of the pupils of Michael Angelo, painted from drawings of his master, and the designs of the great artist are supposed to have furnished the groundwork of some of the paintings of Sebastian del Piombo; an instance of this is thought to occur in the Raising of Lazarus, now in our National Gallery.

The next great name is that of Raphael Sanzio, of Urbino, son of Giovanni Sanzio, himself a painter. Raphael was born in 1483, and died on his thirty-seventh birth-day, worn out, as we are told, by "dissipation and excess of work." How often, alas! when we look into the private history of men, who have astonished the world with their skill in some one of the arts, and have won for themselves such appellations as "the Divine," are we compelled to mourn the excesses and the weaknesses which stamp their character as human, and as unpurified from the corruptions of humanity. Raphael seems to have been almost idolized by his companions, and a great favourite in circles where his youth and natural temperament exposed him to numerous temptations. Raphael was the founder and master of the Roman school. He was equally renowned for the tenderness and sweetness of his female forms, which have never been rivalled, and for the power and grandeur of his larger works. His productions were numerous, and consist of easel pictures in oil,

* See *Saturday Magazine*, Vol. XIX. p. 124.

cartoons, and frescoes, exhibiting also three different manners. In the space of only twelve years, Raphael completed the frescoes of the Vatican and the Farnesina, besides others, amounting to many hundred figures, designed the cartoons, and produced those exquisite paintings in oil which contributed to spread his fame throughout and beyond Italy; at the same time cultivating architecture, poetry, and sculpture. Those who have seen the works of Raphael will fully join in the following encomium: "All that imagination could lend to a strictly imitative art he has added, yet has infused into its creations the warmer sensibilities of life; to nature he has given all that grace and fancy can bestow, consistent with the sweetest of all charms—leaving her nature still." Yet the merits of this unrivalled artist are not always appreciated at first sight. Sir Joshua Reynolds has the following remarks on this subject: "I remember very well my own disappointment when I first visited the Vatican; but on confessing my feelings to a brother artist, of whose ingenuousness I had a high opinion, he acknowledged that the works of Raphael had the same effect upon him—or rather they did not produce the effect he expected. This was a great relief to my mind; and on inquiry further of other students, I found that those persons only, who from natural imbecility, appeared incapable of ever relishing those divine performances, made pretensions to instantaneous raptures on first beholding them. I found myself in the midst of works executed upon principles with which I was unacquainted; I felt my ignorance, and stood abashed. I viewed them again and again; I even affected to admire them more than I really did. In a short time a new taste, and a new perception began to dawn upon me, and I was convinced that I had originally formed a false opinion of the perfection of the art, and that this great painter was well entitled to the high rank which he holds in the estimation of the world."

The styles of Raphael and of Michael Angelo were perfectly independent of each other. The one painted men as they live, feel, and act, and embodied in his works sentiment, feeling, and passion; the other painted man in the abstract, and exerted his sway over the awful and the sublime. The style of Raphael is characterized as the dramatic; that of Michael Angelo as the epic of painting.

Raphael had numerous pupils, the most celebrated of whom was Giulio Romano. A portion of the frescoes in the Vatican were painted by him from his master's designs, and after the death of Raphael, he executed some remarkable frescoes at Mantua, representing the Fall of the Giants. Giovanni da Udine was Raphael's principal assistant in the execution of the fruits, flowers, and other objects in the arabesques of the Loggie. Other disciples of Raphael carried the principles of that master to different parts of Italy, as Perino del Vago to Genoa, Francesco Penni, surnamed Il Fattore, to Naples, Benvenuto Tisio, surnamed Garofalo, to Ferrara.

From the death of Raphael, however, may be dated the decline of the Roman school of art. Many efforts were made to revive the former glory, but in vain. One of these efforts was the founding of St. Luke's Academy at Rome, by Muziano, a pupil of Titian. Caravaggio, Contona, Bernini, Sacchi, and Carlo Maratta are some of the names that shone in these latter days of the Roman School.

Section 2. Venetian School of Painting.

This was the great school for colour, and of this school the chief ornament was Titian. But though the school of Venice was one of the earliest in Europe to cherish the reviving arts, we are not indebted to it for any great accession of noble or intellectual subjects. Historical and religious subjects are not so frequently illustrated by its painters as luxurious banquets, lordly senators, and beautiful female forms. From the twelfth century a movement might be distinguished in the arts of Venice, and in the thirteenth century the number of painters had increased so much that a company was formed, and laws and constitutions were made. Antona da Messina introduced oil colours; the Bellinis carried out his views; and the youngest of these was the master of Titian and Giorgione, two of the greatest names of the school. The genius of Giorgione is said to have been great. He was happy in seizing the leading points of leading objects, and also in the breadth and tone of his pictures. This artist died in the prime of life, cut off by the plague. The most eminent of Giorgione's scholars was Sebastian del Piombo. His portraits are very fine, and his historical pictures combine the designs of Michael Angelo with Venetian colour, an instance of which we have already alluded to in the Raising of Lazarus.

The name of Titian is synonymous with the characteristic of his school; and were his reputation to be taken from one picture, he would not rank, as he always does, *after* Michael Angelo and Raphael. The picture to which we allude is, of course, his Pietro Martyre, that grand work of which the Venetian senate were so justly proud that they prohibited any attempt to remove it from Venice, under no less a penalty than death. This picture occupied him eight years. His method of treating the subject is thus described. "The terrific gasping energy of the assassin, who has cut down the monk; the awful prostration of the monk, wounded and imploring Heaven; the flight of his companion, striding away in terror, with his dark mantle against a blue sky; the towering and waving trees, the entrance, as it were, to a dreadful forest; the embrowned tone of the whole picture with its dark azure evening sky, the distant mountains below, and splendid glory above, contrasting with the gloomy horrors of the murder; its perfect, though not refined, drawing, its sublime expression of dreadful light and shadow, and exquisite colour, all united, render this the most perfect picture in Italian art." Titian was, however, deficient in composition and in poetical fancy, and with the exception of the work above alluded to, there is generally something that strikes the connoisseur as faulty in one of these respects. His mastery of colouring is most astonishing. His pictures are generally bathed in a mellow golden light, and those glowing and gorgeous effects which captivate the beholder, seem to be produced by the general management of the whole piece, rather than by the laying-on of brilliant local tints; so that while the gradations of tone are the most delicate possible, yet in their strongest hues they are powerfully contrasted. "The final splendour is effected rather by painting in under-tones than by lavishing on particular spots the whole riches of the palette. The shadows and under-tones also are enlivened by a thousand local hues, and flickering lights, and his masses by innumerable varieties and play of parts, yet all softened, and blended, and combined by an undefinable harmony. Hence nothing more easy than apparently to copy Titian—nothing more difficult than really to imitate his faithfulness and splendour." It was the practice of Titian to lay on his colours pure, without mixing, in tints by reiterated application, and apparently with the point of the pencil.

Tintoretto was a distinguished pupil of this great master, so much so as to excite a mean spirit of jealousy on the part of Titian, who turned him out of the house. Tintoretto immediately endeavoured to strike out a path for himself, by imitating the drawing of Michael Angelo and the colouring of Titian. His execution was free and daring, and from the rapidity of his working, which was almost miraculous, he was called the "lightning of the pencil." He astonished the Venetians, and made his former master tremble, but while he produced grand and imposing pictures, he evinced little regard to delicacy of feeling and true pathos. Meanwhile Paul Veronese was displaying all the magnificence of colouring characteristic of his school, at the same that he was incorrect both in taste and in drawing. Inferior names succeed, such as Canaletti, Sebastian Ricci, and Marco Ricci, but the school of Venice had faded into comparative insignificance soon after the death of Titian, in 1576. He died at the venerable age of ninety-six, or according to some authorities ninety-nine.

Section 3. Lombard and Parman Schools of Painting.

We now come to the great model of the Lombard school, Antonio Leti, better known as Correggio. "After Raphael, Titian, Michael Angelo, Da Vinci, and Bartolomeo, who would have thought that another style, independent of either, and unlike everything else in the world, could have burst out? But so it was. Of all the painters that ever lived in the world there is no accounting for Correggio. Unlike Greeks, Romans, and Italians, out he came into the world, in colour, drawing, light, shadow, composition, expression, and form, like nature, and unlike any body else, who ever studied nature at all. Michael Angelo, Raphael, Titian we can trace: we see upon whom they were grafted, when they budded and burst forth. But who is Correggio? Nobody is certain. One declares he was poor, another that he was well off; another says he died of a fever which he caught in consequence of carrying all his money in copper, the price of a picture; another says it was no such thing. There is no certainty that his portrait is in existence; in fact there is as much dispute about it as there is about Shakspeare's; and here are his beautiful works, his Notte, his Catherine, his Christ in the Garden, his Magdalene, his

Venus and Mercury, and his *Ecce Homo*, in the National Gallery, the only head of Christ in the world. There is no Christ's head by Raphael which at all approaches it; and the head of Leonard da Vinci in the gallery cannot be endured after it."—*Encyclopædia Britannica.*

Unaccountable as it may appear, Correggio lived and died in ignorance of the great painters of his day, (he was contemporary with Michael Angelo and Raphael,) and in ignorance also of Rome, of the antique, of everything but nature. His most celebrated works are the fresco paintings in the two cupolas of the cathedral churches at Parma, and his easel painting of the Holy Family, called the "Night," which is in the Dresden Gallery. Annibale Caracci, on beholding these works fifty years afterwards, said that everything he saw astonished him, especially the colouring and beauty of the children, who seemed to live, breathe, and smile with so much sweetness and vivacity that he could not help sympathizing with their enjoyment.

The next important name in this school was that of Parmegiano, who exhibited some of Correggio's grace, but blended with it much affectation. His best work is considered to be the Vision of St. Jerome, now in our National Gallery. This artist died, like Raphael, at the age of thirty-seven.

We have thus briefly renoticed the characteristics of the four primitive schools, distinguished by the labours of the old masters, the patriarchs of modern art. These schools were all flourishing at the same time, so that an individual might have witnessed the career of all these eminent men and have survived it. As it was with the arts of Greece, so it was with those of Italy; their duration in a state of excellence was extremely brief. "Is it, then," it has been asked, "the fate of the human spirit, like human institutions, to fall away immediately on attaining a degree of perfection? or rather is not this evidence of powers which shall hereafter expand, grow, and unfold their activities, here on earth chilled, and cramped, and broken?"

At the close of the sixteenth century, the decline of art which followed on the death of Correggio, was stayed for a while by the establishment of the academical school of Bologna, founded by the Caracci. This academy was called the *Eclectic*, it being a leading principle with its conductors to select what was most excellent and valuable, in each of the primitive schools; *design* from the Florentine, *grace* from the Roman, *colour* from the Venetian, *light* and *shade* from the Lombard. The idea was admirable, but it was not carried out with corresponding success, though much, very much was done by means of individual talent to shed glory on the undertaking. The Caracci were themselves extraordinary men. Ludovico the eldest had been taught by Tintoretto, and his works were distinguished for simplicity of character, breadth, solemnity, and grace. He instructed his two cousins in the art, of whom Agostino was more remarkable for his engravings than for his paintings, but Annibale excelled in bold and magnificent compositions. The Caracci were the instructors of Domenichino, Guido, Lanfranco, Guercino, and Albano. The Communion of St. Jerome by Domenichino was pronounced by Poussin to be one of the three best pictures in the world; but this artist though an eminent genius, was in most of his works, heavy approaching to dullness. Guido was one of the greatest ornaments of the Bolognese school. His paintings are graceful and beautiful, but they have also their peculiar defects. The expression was too frequently artificial, and his conceptions of beauty, formed from the study of the antique, have too much of sameness and want of individuality. It is thought that those academic abstractions and refinements of precept may be first decidedly marked in the works of this artist, which being formed independently of nature, hastened the downfall of art in the school of Bologna. Guercino is deemed the most original artist of the school, but his forms are vulgar, and he wanted power and individuality. Albano was agreeable and poetic, Lanfranco bold and incorrect. Contemporary with the Caracci, though belonging to no school, were Caravaggio and his pupil Spagnoletto. But we must close our notice of Italian art with one eminent name, already familiar to the readers of our Magazine*; that of Salvator Rosa, the only native landscape painter that Italy has produced, for the landscapes of the old masters, though grand and perfect compositions, are made subservient to the figures. Salvator Rosa is eminently distinguished as a noble and original mind, in a period of decay and bad taste.

* See *Saturday Magazine*, Vol. XVII., pp. 178, 218, 234

Section 4. The Trans-Alpine Schools of Painting.

The German School is usually considered as German, properly so called, Flemish, and Dutch. Though these distinctions are not based on any characteristic or marked differences of manner, it may be well to adopt them in our notice of German art. Before the age of Albert Durer, the only style discernible in the schools of Germany was the Gothic. Pictures of this style were painted upon wood, usually oak, covered sometimes with canvass, always with a white ground, upon which the outline of the subject was sketched, and the whole overlaid with gilding. This gilding formed the real ground of the picture, which was painted in water or size-colour, with great care and diligence of finish. This early school terminated in the fifteenth century, owing to the more general diffusion of oil painting. But the painters of that school are full of thought, and one in particular, Shoengaer, is said to have been copied by Raphael himself. The picture of Christ bearing the Cross, by Shoengaer is a magnificent composition, and may be traced in Raphael's famous Spasimo in Spain. Of this school we may likewise name Wohlgemuth, the instructor of Durer, and Muiller, or Kranach, burgomaster of Wittemberg, and friend of Luther. But the prince of German artists is Albert Durer, born at Nuremberg, in 1471. Fuzeli says of Albert Durer: "He was a man of great ingenuity, but not of genius. His proportions of the human figure are on a comprehensive principle, founded on nature and the result of deep thinking." A degree of restraint is said to pervade his works, admirable as they are,—a remnant of the Gothic manner, of which the habits of his countrymen and his own ignorance of the antique prevented the removal. His defects are summed up as consisting in want of dignified design, and grandeur of composition, with a hard and meagre outline; his merits, as presenting truth, originality, simplicity of thought, and good colouring. Fuzeli says, that if he approached genius in any part of his art it was in colour; his colour went beyond his age, and as far excelled in truth, and breadth, and handling the oil-colour of Raphael, as Raphael excelled him in every other quality. Contemporary with Albert Durer was Hans Holbein, who came from Basle to England, and died in the service of Henry VIII. Most of his portraits remain in this country. His works are excellent examples of the German School. Lucas von Leyden has been called the Dutch caricature of Albert Durer. The Flemish and Dutch schools were early put in possession of the advantage of oil-colours, and if the Flemish painter, Van Eyck, was not the discoverer, he was at least the means of bringing that mode of painting into general use. But the glory of the Flemish school was Rubens, that wonderful artist whose life and works we propose to sketch in another part of this work. The contemporary masters with Rubens were Van Voss Strada, Miel Savary, Seegers, &c., and the pupils of the great artist were Snyders, Jordaens, Teniers, and Vandyke. The two latter artists have been considered as forming the extremes of the Flemish schools, though in respect of merit they stand in the first rank. Teniers connects the Flemish with the Dutch style, being more elevated than the latter, though less dignified than Rubens. He has painted with exquisite truth and very great beauty of pencil, the customs, scenes, amusements and character of his countrymen. Vandyke again, in the grace and dignity of his portraits, in the intellectuality of his expression and composition, seems to effect a junction between the common and broad nature of the native taste, with the ideal of Italian art. The pictures painted by Vandyke during the early period of his residence in England, are among the finest specimens of portraiture. Here, indeed, in some respects, as the clearness and transparency of his carnations, he is excelled only by Titian—in the graceful air of the heads, and beautiful drawing of the extremities, he reminds us of Raphael, while to these qualities, he has added a silvery tone of pencilling, which, more so than any other master, gives back the delicate and varied hues of real flesh and skin. He has hardly succeeded in history, more, however, from want of practice than genius; for his alleged want of fancy seems not so apparent as has been supposed. In Vandyke we find a most striking proof that excellence in art is founded upon no abstract theory of the ideal, but in selecting, and sedulously adhering to, some one view of nature: hence alone,

The soft precision of the clear Vandyke.

The name of Rembrandt stands at the head of Dutch painters, as Rubens at the head of those of Flanders, though as to rank in the art, Rubens must ever take the lead. Rem-

brandt van Rhyn, in whatever subject he undertook, was unlike all other painters. His style was at once natural and highly artificial—original, yet with a mannerism which runs through all his pictures. Whatever he painted he enriched by his peculiar management of light and shadow. He concentrated the light into one brilliant and dazzling focus, and threw a solemn gloom over all the rest of his picture. A picture of his once seen, there can be no difficulty in recognising other works from the same mysteriously impressive hand. The pupils of Rembrandt were not equal to their master. David Teniers, who owed some of his skill to Rubens, was an extraordinary man, and combined with Rembrandt to form the Dutch school. The principles acted on by these artists were carried into smaller and more delicate productions by David Teniers the younger, Jan Steen, Ostadt, and Cuyp.

The distinctive character of the Dutch school is fidelity, minuteness of finish, and beautiful colouring. Before or contemporary with Rembrandt, who died in 1674, we find many worthy names, such as Both, Hamskirk, Bhergem, Metzer, Blæmart, Breenberg, Wynants, Polemberg, Van der Neer, Van der Warf, and in a higher class, Wouvermans, Larr, and Gherard Douw, the most careful of painters.

Painting has been very successfully practised by numerous Spanish artists, yet no regular school of art appears to have existed at any time in Spain. The first name of real eminence is that of Velasquez, who was born at Seville, in 1599. He was equally eminent in historical and portrait-painting, and while his treatment of his subject was masterly and delightful, he disregarded that over-wrought degree of finish which was common with artists of his day. Murillo is another highly distinguished Spanish painter, and his works must be familiar to many of our readers, since our National Gallery and other public collections are enriched by several fine specimens of his skill. The life of this artist has also formed the subject of a separate notice,* so that we need not dwell on his merits here. Other names might be mentioned, but they fall so far below those of the two distinguished artists just spoken of, that we shall here sum up the characteristics of Spanish art, which are, truth of character, natural expression, fine colouring, and correct, but not elevated design.

There are few original traits in French painting, nor can the style of art in France be characterised, as in other nations, by striking distinctions. The most ancient among French works in the art appear to have been on glass, and devoted to the service of religion. These, with a sort of enamel, formed by the fusion of metallic colours with glass, seem to have chiefly prevailed until Francis I., anxious for the improvement of his subjects, brought artists from Italy. Among these was the great Leonardo, who died at Fontainbleau, in the arms of this monarch, in 1524, and before he had exercised his pencil in France.

From the death of Francis to the commencement of the seventeenth century, internal discord and intrigue in France kept the nation back in the career of improvement. The reign of Henry of Navarre was favourable to the arts, but foreigners were sought for, to execute important works, as in former times. The first French master of eminence, Vouet, was born at the latter end of the sixteenth century, and brought forward disciples who supplied the school of that period. In 1594 Poussin was born, and his name forms the glory, not only of that period, but of French art in general. Yet it is scarcely correct to speak of him has a French artist. His taste was formed in Italy, where he lived for twenty years before he was invited to the French court: nor was he to be retained at a distance from his beloved Rome. Tired of court cabals, and of the jealousy of his brother artists, he fled beyond the Alps, and returned no more to his native country. From his close study of antiquity appear to be derived the chief de ects of his style. "The characteristics of the works of Poussin," says Memes, "are extreme correctness of form and costume, great propriety in keeping, and the most enchanting simplicity of design. These beauties he derived from constant study and deep knowledge of ancient sculpture. While he thus followed closely one of the sources of excellence, he, however, neglected the other, and in painting the more important—nature. Hence the frequent want of interest, the defects of expression, the cold and sombre colouring; the absence of that breathing similitude, which animates even the subjects of his intense contemplation. But the ancient sculptors were not satisfied with nature at second hand—the great cause of failure in the painter. The perfections of their statues he transferred to his canvass, forgetting that these were copied from men. In the choice of his subject, and manner of representing its incidents, Poussin has few equals; in his pictures too there is always a most charming harmony of thought—the scene, the figures, the handling, even the forms of inanimate objects in his landscapes, all have an antique air, transporting the imagination into an ideal world. Hence of all those who have made the attempt, Poussin has best succeeded in classical allegory."

In the reign of Louis XIV. honours and rewards fell thickly in the way of artists, through the favour of the sovereign; but these only succeeded in raising a school of imitators and flatterers. The master of this school was Le Brun, an artist of good capabilities, but too artificial, and too systematic in expression. He was quite a despot in French art, and having the favour of the sovereign, was able to lord it over sculptors, painters, and architects. Le Sueur was contemporary with Le Brun, and in many respects his superior. He died in 1655, at the age of thirty-eight. In 1600 Claude Gelec was born in Lorraine, and taking his surname from the place of his nativity, is known by the lovers of landscape painting, as the most favoured of all that have ever attempted that department of the art. This eminent man cannot be claimed by France as one of her artists, for he left that country in his early years, and never returned to it. He first crossed the Alps as the runaway apprentice of a pastry-cook; and was not only self-taught, but had to overcome what seemed at first like a natural incapacity for the art. He has ever stood unrivalled in landscape painting, and to him that department of art owes much of the dignity which now invests it. "The aërial perspective and the liquid softness of the tones in his pictures,—the leafing, forms, and branching of the trees, the light flickering clouds, the transparency of hue, the retiring distances, all make as near approaches to nature as it is possible for art to accomplish." Claude's landscapes, however, are not the representations of existing scenes in nature; they are most frequently the result of his own imagination, or what is termed *heroic* landscape. However beautiful, and however honourable to the talent of the painter, they are, therefore, unpossessed of the charm of reality.

Of the numerous artists which sprang up in France during the eighteenth century, it is unnecessary to say more than that they all exhibited more or less of the principles of the school of Louis XIV. During the sway of Napoleon, the artist David became court painter, and everywhere throughout Europe, with the exception of our own country, was his style introduced and followed. In speaking of this artist we shall do no more than quote the strong language of one well qualified to judge of his merits. "We do not deny David's talent, because it must have required talent to mislead the continent of Europe. In art, David's expression was taken from the theatre, and his actions were borrowed from the opera house; his forms were Roman and not Grecian, and his colour was hideous enough to produce ophthalmia. If he and his pictures, with all he ever designed, and all he ever invented, had not appeared in the world, or having appeared, had been utterly rooted out of it, the atmosphere would be purer. He is a plague spot, a whitened leprosy in painting, that haunts the imagination with disgust." This he had the impudence to say of Rubens. David was not very successful in portraits: his best performances are the numerous likenesses of his imperial patron. Dr. Memes mentions having seen the original sketch for one of these, which was never afterwards touched, being taken under the following interesting circumstances. Napoleon had been occupied the greater part of the preceding day and night in arranging the final operations of the campaign which terminated in the battle of Waterloo. When now past midnight, instead of retiring to repose, the emperor sent for David, to whom he had promised to sit, and who was waiting in an apartment of the Tuilleries. "My friend," said Napoleon to the artist, "there are yet some hours till four, when we are finally to review the defences of the capital; in the meantime, *faites votre possible*—[do your utmost] while I read these dispatches." But exhausted nature could hold out no longer; the paper dropped from the nerveless hand, and Napoleon sunk to sleep. In this attitude the painter has represented him. The pale and lofty forehead, the care-worn features, the relaxed expression, the very accompaniments wear an impress inexpressibly tender and melancholy. With the dawn of the morning Napoleon awoke, and springing on his feet, was about to address David, when a taper just expiring in the socket arrested his eye. Folding his arms

* See *Saturday Magazine*, Vol. XIX., pp. 2, 18.

n his breast, he contemplated in silence its dying struggles. When with the last gleams, the rays of the morning sun enetrated through the half-closed window curtains, "Were superstitious," said Napoleon, with a smile, "the first bject on which my sight has rested this day might be ound ominous; but," pointing to the rising sun, "the ugury is doubtful—at least, the prayer of the Grecian hero ill be accorded,—we shall perish in light!"

Section 5. History of Painting in England.

n Walpole's interesting work it is shown that before the iddle of the thirteenth century, evidences are found of il-painting in England; and that in the fourteenth, ainting on glass, heraldic emblazonments, the illumination f manuscripts, with similar approaches to elegance, were ultivated among our ancestors, by natives of this country. et in the period when painting was practised with he greatest success in foreign countries, and had arrived the period of its greatest splendour, there was such striking degree of inferiority in the efforts of English rt, that the cause was supposed to arise from the nature of he climate, as being unfavourable to the developement of alent. This idea has been strikingly disproved by succeeding history, so that we must look for the cause in the history f our nation, in the unpropitious events which have ccurred to mar the progress of the fine arts. Civil war, eligious dissension, and a rage for nautical enterprise appear o have been the barriers up to the time of Charles I. he early part of the reign of that monarch was most vourable to the arts. He formed a collection of pictures, hich was then the most valuable in Europe, and seemed ell adapted to guide the national taste, and to become the eans of founding a native school. The most eminent rtists of the age were invited to his court, and found their bours understood, appreciated, and well rewarded by the ing. Foreign nations now propitiated the English court ith presents of a very different character from those which ad been bestowed on preceding sovereigns. The states of olland sent Tintorets and Titians; the king of Spain preented the Cain and Abel of John of Bologna, with Titian's enus des Pardo; and other states courted Charles's favour ith similar though less valuable gifts. The king also ade most judicious purchases. Through the interpotion of Rubens he obtained the Cartoons of Raphael, and, y the negotiation of Buckingham, the collection of the uke of Mantua, containing eighty-two pictures, principally y Giulo Romano, Titian, and Correggio. The king spent uch of his time in the great gallery at Whitehall, where ese treasures of art were accumulated. This gallery conined four hundred and sixty pictures, all of them the rivate property of the king. It was with delight that harles saw a taste for refinement gradually spreading nong his subjects. The nobles imitated him in patroning works of art; and it was not long before a subject rned for himself the appellation of the Scottish Vandyke. his was Jamieson of Aberdeen, to whom the king sat for is likeness, and on whom he bestowed many marks of oyal favour. Every essential to the foundation of a ritish school seemed now accomplished, when the fearful vents which closed in blood the reign of the unhappy onarch proved more than usually destructive to the arts; r the stern republican party, in the first burst of its al, was especially bent on destroying every semblance of rnamental refinement. In this place we deem it necessary notice an idea, which appears to us a most erroneous one, e., that not only were the puritans of those days, by their istaken zeal, the enemies of the fine arts, but that Prostanism in general is inimical to the advance of the same. We have lived long enough to see this notion overthrown by he uprising and flourishing of talent in our Protestant ation, and the liberal rewards and honours it has met with; et something like an agreement with the absurd doctrine ay be found in many of our writers. Our Reformers hemselves, indeed, were purifiers of religion, not patrons of t; but the war which they waged against the idle decotions, as well as the ceremonies and superstitions, of the urch, was one to which duty incited them, and however e may lament the destruction of ancient paintings (though is doubted whether the paintings destroyed in the English urch were worthy of regret,) we cannot justly attribute to he Reformers any other motive than the extinction of idolaous rites, nor can we blame our purer faith for the temporary eck which it gave to the art of painting. Sincerely do e agree with the opinion that the Reformation, by restorg to the human mind the uncontrolled exercise of its own faculties, by unlocking the barriers by which the will and the powers of free inquiry had been imprisoned, has stamped upon every British institution, as upon every effort of British talent, the worth and the manliness of independent character. The Reformers were, in fact, so far from opposing the progress of painting, that they viewed such accomplishments, when kept in their proper place, with especial favour. Among the ranks of these men were to be found some of the most accomplished minds of which the age could boast. For such men to have been the enemies of well-directed intelligence, of whatever description, would have been to contradict their own principles and practice. Luther was the friend and patron of several artists, and Holbein came to England most warmly recommended by him. The Reformers prohibited the introduction of pictures into churches, but they are not to be stigmatised as if desiring to exclude them from more appropriate situations.

We are glad to find that a modern writer on the Fine Arts has the honesty to state the following opinion, though opposed by the almost universal feeling of his fellows. "Highly as we honour the talent for artisanship, and intimately connected as is the glory of the land with the reputation of its arts, we cannot for one moment entertain the proposal now so generally, we had almost said unblushingly brought forward, of converting our churches into spacious repositories for the productions of the pencil. Here we have explicitly to state an opinion, though opposed by almost every writer on the Arts: first, that neither is the house of God a proper receptacle for pictures; nor, secondly, if every Protestant place of worship were open to such ornaments, is it clear that art would be materially advantaged. Let our sacred edifices be as nobly simple, as massively grand as may be: let them exhibit every beauty of architecture if needful; the effect will elevate, without distracting the mind. But pictures do not seem associated either with the place or with our meditations; with us the only association is that of mere ornament. We might, however, be accused of treating the subject too seriously, were an attempt made to show the sinfulness of abducing even one thought from Heaven, to fix it on a merely ornamental appendage. We shall therefore suppose that in our country, people do not go to church to see pictures, and that, here as elsewhere pictures are painted to be seen. Now, the time of divine service with us is short, and that space is passed without intermission in sacred duties, in prayer, in praise, and in exhortation. Either these momentous engagements or the pictures must be neglected. In a Protestant assembly every one is seated in his place; a picture can be viewed properly from a very few points, perhaps only one. Granting them all the advantages 'of pictures in unison with the feelings of the mind, exemplifying in the most striking manner the objects of its highest admiration and respect,' how limited is the number that could enjoy them! In the Romish ritual external emblems are certainly permitted as stimulants to inward devotion; of these, pictures are among the most favoured. In our faith the symbols are simple as its practice, and too sacred even to be named here. We have no wish, then, to decry the use or advantage of paintings to the Roman Catholic, but it seems sufficiently obvious that to a Protestant they can at best be but useless in a place of public worship."

But we return to our history. Lely was portrait-painter to Charles II., and employed his pencil on the beauties of that luxurious court. Kneller, who in general painted too expeditiously to paint well, has left a fine portrait of Sir Isaac Newton, which surpasses most of his other works. At the same period there were many artists of some merit, as Dobson, Biley, Hoskins, and Cooper, the two latter celebrated as miniature painters, Henry, Highmore, Greenhill, Buckshorn, Jervas, Richardson, Hudson, and others. Hudson was the master of Reynolds, with whom the British school first rises into the dignity of high art.

But previously to this, that extraordinary painter, Hogarth, had appeared, whose peculiar excellences no imitator has at all rivalled. He belonged to no school; he received no instruction. He painted life as he saw it; and a mournful picture of sin and misery do his scenes (comic as many of them are) present to us.

In 1752-3 Sir Joshua Reynolds, on his return from the Continent, commenced those portraits which have established his claim to be considered as the founder of the English school. He was an artist of surpassing talent, gorgeous in tone and colour, unexceptionable in composition, deep in light and shadow, beautiful in character, and the purest of

all painters of children and women. At the commencement of his career he met with such opposition and discouragement as genius is often subjected to, but these he gradually overcame. Of the tameness and insipidity of the style against which he had to contend we may gather some idea from his own description of the artists of his day. "They have got a set of postures which they apply to all persons indiscriminately; the consequence is that all their pictures look like so many sign-post paintings: and if they have a history or a family-piece to paint, the first thing they do is to look over their common-place book, containing sketches which they have stolen from various pictures: then they search their prints over, and pilfer one figure from one print, and another from a second; but never take the trouble of thinking for themselves*."

While Sir Joshua was thus carrying the palm in portrait painting, and could only be followed at a distance by Romney, Opie, Barry, and other contemporary artists, two eminent men were laying the foundation of the English school of landscape; these were Gainsborough and Wilson. The former is acknowledged to be the most decidedly English of all our great masters, and though chiefly excelling in rural scenery, his portraits also showed great genius. Yet Wilson ranks higher in landscape painting than Gainsborough, as being the more imaginative of the two, and his aërial perspective is considered not inferior to that of Claude. The works of Gainsborough have been already noticed in our *Magazine;* (Vol. XIX, pp: 178, 218;) and viewing this artist in the important light of founder of our English school of landscape-painting, we select our illustration from among his well-known productions. Wright was an artist remarkable for exquisite finishing and wonderful effects of light; Morland painted by the force of genius, rather than by means of acquired knowledge; his great excellences lie in the simple representation of common scenes, in which domestic animals form a principal part of the scene, while the back-ground and distances exhibit a true feeling for nature.

Sir Joshua Reynolds was succeeded in the Royal Academy by Benjamin West, of whom Sir Thomas Lawrence, when called to be his successor, thus speaks. "At an era when historical painting was at its lowest ebb, (with the few exceptions which the claims of the beautiful and the eminent permitted to the pencil of Sir Joshua,) Mr. West, sustained by the munificent patronage of his late Majesty, [George III.] produced a series of compositions, from sacred and profane history, profoundly studied, and executed with the most facile power, which not only were superior to any former productions of English art, but far surpassing contemporary merit on the Continent, were unequalled at any period below the schools of the Caracci." West was employed up to his eightieth year in new exercises, and deeper studies. Speaking to Lord Elgin, in 1811, of a late production of his (the artist's) pencil, West declared, that, though at a very advanced period of life, it had been his ambition to introduce those refinements which are so distinguished in the collection of marbles obtained by the noble lord. "Had I been blest," says the artist, "with seeing and studying these emanations of genius at an earlier period of life, the sentiment of their pre-eminence would have animated all my exertions; and more character, and expression, and life, would have pervaded my humble attempts at historical painting†."

The genius of Wilkie does honour to our country, and has raised our domestic school of art to the highest eminence. Scotland boasts the honour of producing this extraordinary man, and Europe mourns his early loss. His life and works have been so recently sketched in our *Magazine*, that it is needless to dwell on them here. But we may notice another Scottish artist of distinguished excellence. Sir Henry Raeburn was born in 1756, and died in 1823. He was originally apprenticed to a goldsmith, and it does not appear that he ever had a single lesson from a drawing-master. Yet he painted miniatures with success during his apprenticeship, and from these smaller works, proceeded to large portraits in oil. These early efforts met with encouragement from Sir Joshua Reynolds, who recommended him to visit Italy.

After spending two years abroad, Raeburn entered on his professional career. His style speaks powerfully to the imagination, through the slenderest means addressed to the eye. To use the words of an efficient critic, "He has carried the principles of Sir Joshua to the very verge of indistinctness; but what is given has such vigorous meaning, that in the power of the leading forms the fancy discovers an intelligence, which, overspreading the whole composition, and bursting from each master-line, guides the mind triumphantly over the blank masses often composing the interior. If then, to produce strong effect, by whatsoever means, be the object of art, Raeburn has succeeded beyond most painters, but if true excellence consist in blending into one harmonious whole the delicate markings and grand contours of nature, he has failed; if pictures are to be viewed only on the walls of a gallery, at a distance from the spectator, his portraits correspond with this arrangement; but if the eye loves to rest upon features dear to the affections, or prized by the understanding; if it delight to trace the shades of feeling and the lines of thought; if these wishes can be gratified, and are indulged in the master-pieces of art, then does Raeburn, and not only he, but the great majority of the English school, rest far behind." Runciman, and Ramsay, son of the poet, were also eminent in Scottish art, and there are other names of considerable merit, as More, Cochrane, Sir George Chalmers, &c.

Of the artists either now living or but recently taken from us, the English school contains many of great excellence, whose names are so fully before the public at the present time, that we may refer to our annual exhibitions, and the fame accruing from them, as the best guide to the appreciation of their respective merits.

Compared with foreign art the distinctive character of the English school is strongly marked. Painting on the Continent exhibits a striking uniformity of style, with such peculiarities as, on a general view, will not lessen the truth of a common classification. The foreign artist, then, studies to detail, but fails in power of general effect; his performances are more valuable as works of art and imitation, than of imagination or abstract resemblance. The parts are beautifully made out, finely drawn; but the whole is too seldom connected by any animating principle of general similitude uniting the whole. Hence the dry, meagre, and disjointed particulars, the usual components of their labours, though in themselves truer than the constituents of British art—better drawn, it may be, and more carefully finished, yet contrast disadvantageously with the bold and powerful, though large generalisations of our pencil. The English artist paints more to the mind, and the French and Italian to the eye, consequently there is more genius shown by the former than the latter. Art with us represents objects as they seem in their relation rather than as they actually exist; among our rivals it delineates things as they are in themselves, to the neglect of those modifications by which reality is diversified as viewed in reference to a medium of expression such as painting. In the one case nature is seen and imitated as a picture; in the other, her operations and forms are contemplated as materials out of which pictures are to be wrought. Hence English art satisfies, but deceives; the foreign does not deceive, but fails to satisfy.

The great defect in the practice of English art must be admitted to exist in imperfection of details. In portraiture this has spread to a great extent; and with the greatest advantages as to models, the portraits of British females are too frequently decided failures. There is a sad forgetfulness of the principles of Vandyke, or even of our own accomplished Lawrence. In the works of present artists we find too little attempt to imitate the delicacy and transparency of tint remarkable in Vandyke's likeness. Male portraits are better executed than those of females, chiefly from the bolder lineaments of the subjects. Yet we may hope, from recent tokens in the productions of the most esteemed masters, that a more scientific and perfect style is making its way.

In historical pictures, expression has been sadly wanting. Our paintings of this description are likewise defective in composition, not in the symmetrical arrangement and grouping of figures, but in the real poetry of the art, in the facile, the creative power over the means and materials of the science—in the skill of causing them to fall as if by chance, and without effort or visible design, into the most harmonious, most striking, and most effectual combinations.

* For a notice of Sir Joshua Reynolds and his works, see *Saturday Magazine*, Vol. XIV., pp. 2, 25.

† A notice of Benjamin West and his works, is contained in *Saturday Magazine*, Vol. XVI., pp. 170 186.

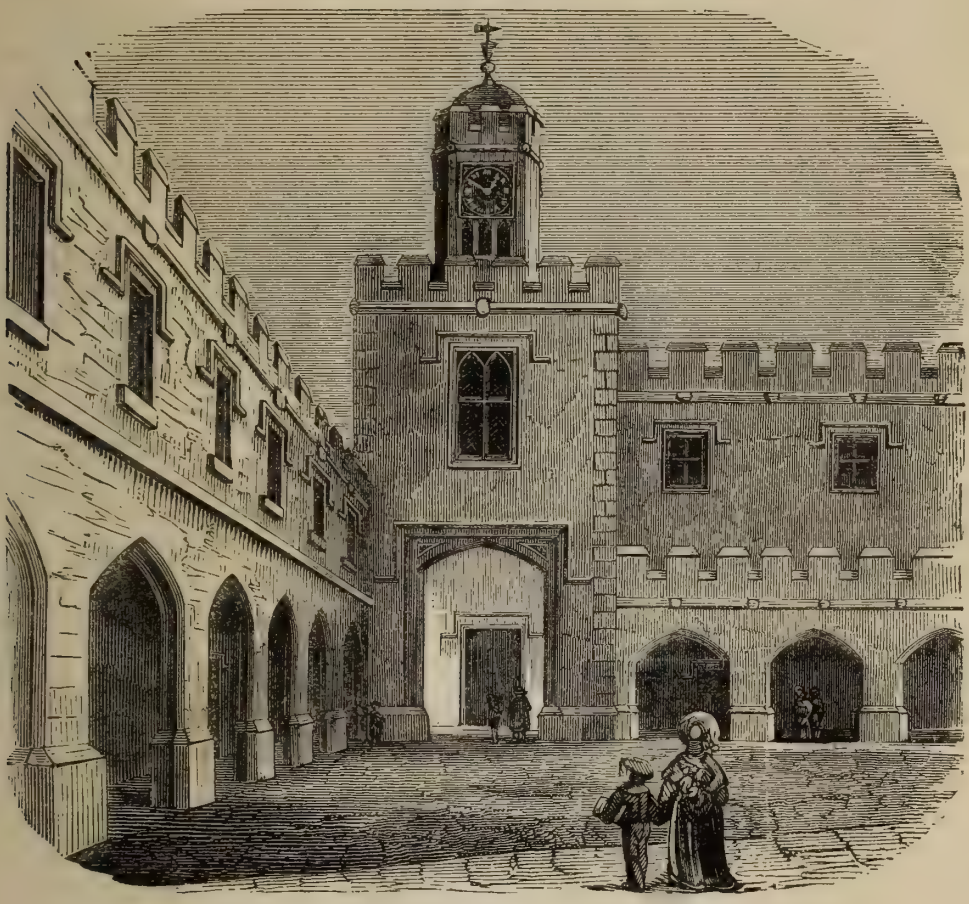
LONDON:
JOHN WILLIAM PARKER, WEST STRAND.
PUBLISHED IN WEEKLY NUMBERS, PRICE ONE PENNY, AND IN MONTHLY PARTS, PRICE SIXPENCE.
Sold by all Booksellers and Newsvenders in the Kingdom.

THE

Saturday Magazine.

No. 626. APRIL 2, 1842. Price One Penny.

HISTORICAL NOTICE OF RUGBY SCHOOL I.



ENTRANCE TO THE HALL AND PART OF THE QUADRANGLE.

There is perhaps no feeling which reflects so much credit upon its possessor, as that pure and practical charity which in all ages, and especially after the Reformation, induced men to appropriate part of their wealth to the foundation of establishments for gratuitous education, and there is something elevating and noble in the principle which caused many of them to bestow those benefits upon the places of their nativity, rather than upon those where their possessions were acquired. Until the middle of the sixteenth century, the Church was generally the object of testators' attention, though even in that dark period, literature was frequently remembered. When, however, the mind became rescued from the trammels of superstition, those sums which, but a few years before, would in all probability have been bequeathed for the performance of masses, the support of priests, or for the purchase of articles for the service of the altar, were appropriated to far more useful purposes.*

The same objects—the honour and worship of God—were still aimed at, but in a more reasonable manner. The extension of religious knowledge among the young, and their acquirement of various sorts of useful information came to be desired by benevolent individuals, and inculcated by the respective founders of schools.

To rational piety and well-directed philanthropy, Rugby is indebted for that splendid establishment which has conferred so much celebrity upon its name. The town of Rugby is situate near the eastern border of the county of Warwick, and is written *Rocheberie* in Doomsday Book, so called, according to Dugdale, from *roach*, a rock or quarry of stone, and *berie*, a court or habitation: but, according to another authority, the derivation is Celtic, from *rue* a river and *bye* a town. Either derivation will suit the local circumstances of the place, for there is a quarry of stone in the neighbourhood, and the river Avon is not far from the town.

Rugby is seated on a beautiful eminence and has a cheerful appearance. Until the foundation of the celebrated school it possessed but slight claims to notice; and although in the thirteenth century it obtained a grant of a weekly market and an annual fair, yet for nearly three hundred years it remained in comparative obscurity. Nor in that long period does it seem to have been once the scene of any event of historical interest, to have given birth to a single individual who became distinguished by his talents or conduct, or to have partaken in the least degree of the advantages which numerous towns, of equal original insignificance, have derived from industry and commerce.

Of the founder of Rugby school little more is known than that his name was Lawrence Sheriff, of the

* *History of the Town and School of Rugby*; By Nicholas Harris Nicolas, Esq., F.S.A.

city of London, grocer. He appears to have been a member of the Grocers' Company, from his great partiality for their arms, which he has ordered on several occasions to accompany the initials of his name. He has been spoken of as a native of Brownsover, and of low origin, but probabilities are in favour of his having been born at Rugby, and of respectable parents. He died possessed of a handsome house at Rugby, which he assigned to the use of his schoolmaster. This house, in its day, must have been one of the first in the town, being a capacious mansion, with an arched porch over its chief entrance. It is imagined that it was the dwelling-place of Sheriff's parents, and his own abode in his early years. That his father and mother did not occupy the inferior station in society which has been attributed to them, appears pretty certain, from the fact of their having been buried within the walls of the church, a distinction which was never permitted but to persons of some property and consequence.

When Sheriff was settled in London as a grocer, he appears to have quickly risen to some consequence in his particular line of business, as he was appointed one of the tradesmen of the Royal Family: he appears also to have had some employment about the court; or, at least we may infer as much from the following anecdote of him, preserved in Fox's *Book of Martyrs*, which, being the only historical notice as yet discovered relating to the founder of Rugby School, and being moreover very characteristic of the times in which he lived, we quote entire. Fox introduces this narrative in order to "show forth the malicious hearts of the papists towards this virtuous queen, our Sovereign Lady, in the time of Queen Mary, her sister."

Soon after the stir of Wyatt, and the troubles that happened to Queen Mary for that cause, it fortuned one Robert Farrer, a haberdasher of London, dwelling near to Newgate Market, in a certain morning to be at the Rose Tavern (from whence he was seldom absent), and falling to his common drink, as he was ever accustomed, and having in his company three other companions like himself, it chanced the same time one Lawrence Sheriff, grocer, dwelling also not far from thence, to come into the said tavern, and finding there the said Farrer, (to whom of long time he had borne good-will), sat down in the seat to drink with him. And Farrer, being in his full cups, and not having consideration who were present, began to talk at large, and, namely against the Lady Elizabeth, and said that Jill had been one of the chief doers of this rebellion of Wyatt, and before all be done, she, and all the heretics, her partakers, shall well understand it. Some of them hope that she shall have the crown, but she, and they, I trust, that so hope, shall hop headless, or be fried with faggots, before she come to it. The aforesaid Lawrence Sheriff, grocer, being then servant to the Lady Elizabeth, and sworn unto her grace, could no longer forbear his old acquaintance and neighbour Farrer, in speaking irreverently of his mistress, but said unto him, "Farrer, I have loved thee as a neighbour, and have had a good opinion of thee, but hearing of thee that I now hear, I defy thee, and tell thee, I am her grace's sworn servant, and she is a princess, and the daughter of a noble king, and it evil becometh thee to call her a Jill. For thy so saying, I say thou art a knave, and I will complain on thee."—"Do thy worst," said Farrer, "for that I said I will say again:" and so Sheriff came from his company.

Shortly after, the said Sheriff, taking an honest neighbour with him, went before the commissioners to complain. The which commisioners sat at Bonner's the Bishop of London's house beside St. Paul's, and there were present, Bonner, then being chief commissioner, the Lord Mordaunt, Sir John Baker, Dr. Darbyshire, Chancellor to the bishop, Dr. Story, Dr. Harpfield, and others.

The aforesaid Sheriff, coming before them, declared the manner of the said Farrer's talk, against the Lady Elizabeth. Bonner answered, "Peradventure you took him worse than he meant."—"Yea, my lord," (said Dr. Story,) "if you knew the man as I do you would say there is not a better Catholick, nor an honester man, in the city of London."

"Well," said Sheriff, "my lord, she is my gracious lady and mistress, and it shall not be suffered, that such a varlet, as he is, should call so honourable a princess by the name of a Jill. And I saw yesterday in the court, that my Lord Cardinal Pole, meeting her in her chamber of presence, kneeled down on his knees, and kissed her hand. And I also saw, that King Philip, meeting her, made her like obeysance, and that his knee touched the ground. And then me-thinketh it were too much to suffer such a varlet, as he is, to call her a Jill, and to wish them to hop headless that shall wish Her Grace to enjoy the possession of the crown, when God shall send it to her as in the right of her inheritance." "Yea, stay there," quoth Bonner; "when God sendeth it unto her, let her enjoy it. But truly," said he, "the man that spake the words you have reported, meant nothing against the Lady Elizabeth, your mistress, and no more do we. But he, like an honest and zealous man, feareth the alteration of religion, which every good man ought to fear: and therefore," said Bonner, "good man, go your ways home, and report well of us, and we will send for Farrer and rebuke him for his rash and indiscreet words, and we trust he will not do the like again." And thus Sheriff came away.

Such are the scanty biographical remains of a man to whom the county of Warwick in particular, and the public in general, are indebted for this splendid foundation.

We come now to notice Sheriff's will, some of the items of which are rather curious. He desires that his body may be decently buried in the church of St. Andrew's in Rugby, but the funeral to be first done in the city of London, whereat he will have a learned man to preach the word of God, and all other things meet to be done; and after that his body to be decently carried to Rugby, and there buried near the bodies of his father and mother. He gives ten pounds to be distributed on the day of his burial in Rugby, to all the poor people that shall attend it; that is to say, to every poor man and woman twelvepence, and to every poor child twopence; and to the master, wardens, and company of grocers he leaves the sum of 13*l.* 6*s.* 8*d.*, of which sum he wills, that 6*l.* 13*s.* 4*d.* be bestowed on a recreation of the company on the day of his burial.

It appears to have been the original intention of the founder of this school to have endowed it only with his parsonage of Brownsover and his mansion-house in Rugby, adding fifty pounds towards the erection of the school; but from some cause now unknown he increased his donation with the third part of his estate in Middlesex,—the great cause of the present prosperity of the school. His will bears date 22nd July, 1567, and it was probably made in London. But within less than six weeks he is found at Rugby revoking parts of his will by a codicil, dated 31st August of the same year, and adding this most important bequest to the same trusts and uses as he had before by deed settled his parsonage of Brownsover and his mansion in Rugby.

This act being done at Rugby so soon after his disposal of his affairs, makes it probable, (says Ackerman,) that some offence received, in the course of his visit, from his relations, who would not be much disposed to approve his leaving his house and land from them, for what they might consider as such romantic purposes, might be the occasion of this great alteration in favour of his charity: great, indeed, it was not at that time, for it was the gift of no more than a third part of twenty-four acres of land; but the particular situation of those few acres has since made them immensely valuable.

At the time of the founder's decease the rent of those ten acres was not more than ten pounds a year. A few years ago the rental was estimated at many thousand pounds. By an inquisition taken soon after Lawrence Sheriff's death, it appears that he died in London, on the 20th of October, 1567.

The benevolent intentions of the founder do not appear to have been scrupulously fulfilled by those in whom he placed confidence. Of the two trustees of his will, Harrison died soon after him, leaving Field the surviving trustee, who thought proper to retain, for his own benefit, the third part of Conduit Close, which had been devised for the maintenance of the school; and it continued in a state of alienation for many years. Several

suits were ineffectually instituted, by different masters of the school, for the recovery of it; until, in consequence of the act of the 43rd of Queen Elizabeth, to redress the misapplication of funds given to charitable uses, a commission was issued in Middlesex, in the 12th of King James I. 1614, and an inquisition taken at Hicks's Hall, before the Bishop of London, Sir Henry Montague, and others, the result of which was a report to the Chancellor in favour of the charity, and a restoration to the school of that part of the Conduit Close originally conveyed to Harrison and Field, with all arrears. At the same time twelve trustees of the most respectable gentlemen of the county and neighbourhood were appointed for the better securing of the same, and the application of it to the uses intended.

The strong arm of the law was also required to secure to the uses of the charity the property in Rugby and Brownsover. By an inquisition taken at Rugby, in April, 1653, the possession of the property was found to have been *usurped*, and it was ordered that payment of arrears and of sums which had been withholden, should be made to the trustees, to be applied, first, to the indemnification of those who had been injured by the usurpation in question, and then to the repairs of the school-house, alms-houses, and premises. It was likewise provided by this inquisition, that the trustees should hold four meetings at Rugby in every year, and that out of the rents and profits they should take to themselves, for their entertainment at those meetings, a sum not exceeding twenty shillings per annum.

The Middlesex estate, at the time it was bequeathed, consisted of the Conduit Close, and pasture-land, (on which Lamb's Conduit Street and the adjoining streets now stand,) lying nearly half a mile from any of the houses in the city then in being. There was not at that time much reason to suppose that the Conduit Close would ever form part of the metropolis, and shortly after the date of the bequest, viz., in the thirty-fifth year of Queen Elizabeth, an Act of Parliament was passed, forbidding the erection of any houses within three miles of London and Westminster. So also when James I. came to the throne, a proclamation was issued, strictly prohibiting all persons from building on new foundations within the walls, and within three miles of the city gates, on penalty of having all such houses destroyed. Other proclamations to the same effect appeared from time to time, probably under the idea that the frequent return of the plague was occasioned by the already too great population of the city. But as time passed on, these prohibitive laws and proclamations were forgotten, and many acres of land adjoining the city were gradually covered with houses. Accordingly, in 1686, we find the Conduit Close described as an inclosed ground, let to one Nicholas Barbon, doctor in physic, on a building-lease for fifty years, at the annual rent of 50*l.* When sixteen years of this lease had expired, Sir William Mildman, knight, became entitled to the premises for the remainder of the term, and agreed with the trustees for a further term of forty-three years after the expiration of the previous term.

In the year 1748 the clear yearly produce of all the property belonging to this charity did not amount to more than 116*l.* 17*s.* 6*d.*; of which 63*l.* 6*s.* 8*d.* was appropriated to the master's salary, and the remainder to the relief and clothing of the four almsmen, and the repairing of the school, mansion-house, and other buildings belonging to the charity, as also the chancel of Brownsover.

CONTENT of mind, springing from innocence of life, from the faithful discharge of our duty, from satisfaction of conscience, from a good hope in regard to God and our future state, is much to be preferred before all the delights which any temporal possession or fruition can afford.—BARROW.

COMMERCIAL HISTORY OF CURRANTS AND RAISINS.

II.

HAVING in the former paper given a slight sketch of the cultivation and commercial history of the small dried grapes which are sold at grocers' shops under the name of *currants*, we will proceed to notice the larger kinds of dried grapes, generally known as *raisins* or *plums*.

There are many varieties of the raisin, produced from different species of vine. They derive their names from two circumstances, one relating to the country where they grow, and the other to the kind of grape of which they are made. Thus there are Smyrnas, Valencias, Malagas, &c., named after the districts which produce them; whereas the terms *muscatels*, *blooms*, *sultanas*, &c., are distinctive names for different species. Some terms, too, such as *jar-raisins*, *raisins of the sun*, relate to the mode in which they are dried, or packed for exportation.

One of the finest species of raisin is the Malaga, grown in Spain in the district of that name. When Laborde wrote, about the commencement of the present century, he estimated the exports of Malaga raisins at 240,000 cwts., valued at 625,000*l.* sterling. In 1829, M. Moreau de Jonnès, however, stated the value at a much lower amount. In 1834, the exports of raisins from Malaga consisted of nearly 280,000 boxes, and 160,000 barrels, one half of which were shipped for the United States, and one-sixth for England. Two-thirds of all the raisins brought into this country are imported from Spain.

The raisins exported from Malaga are of three kinds, *muscatels*, *blooms* or *raisins of the sun*, and *lexias*. As the Malaga raisins are deemed finer than any other, and muscatels are the finest of the Malagas, it may be supposed that they are deemed a choice and important fruit. The species of grape called the white muscat of Alexandria is that which produces the muscatels. The berries are large, oval, white, rather firm-fleshed, with a very rich and superior flavour. The names applied to the best varieties of raisin-grape in most countries, show how extensively the muscat species is cultivated for this purpose; for instance, there are the muscat of Jerusalem, the muscat of Malaga, the passé-musquée, the passé-longue musquée, and the muscat d'Espagne. In its preparation as a raisin or dried grape, no art is used: the fruit is merely placed in the sun, and frequently turned. There is a species of grape called the black muscat of Alexandria, and a red muscat or muscatel, both of which have a firmness of pulp sufficient to render them fit for drying; for grapes, however rich they may be, and excellent in a fresh state, yet if they do not possess a certain degree of firmness, are unfit for drying, inasmuch as their substance would be too much dissipated in the process. All muscatel raisins are exported from Malaga in boxes.

The *blooms*, or raisins of the sun, are rather a different species from the muscatel, but they are dried in a similar way, by the heat of the sun, and are exported from Spain in earthen jars. Different modes of drying are adopted, according to the quality of the grapes. The commonest kinds are placed in a heated oven, and there dried. The most simple, and when circumstances are favourable, the best mode of preparation, is that adopted in the case of muscatel and bloom raisins; in which the grapes are dried, after being cut when fully ripe, by exposure to the heat of the sun on a floor of hard earth or of stone. A third method is, to cut the stalk half-way through when the grapes are nearly ripe, and leave them suspended till the watery part is evaporated; the flow of sap is in a great measure prevented from entering the fruit, in consequence of the incision, and whilst evaporation continues to go on undiminished, desiccation must take place.

There is a curious mode of drying, adopted both at Malaga and Valencia, in the case of *lexias*, a kind of raisin which acquires that name from a ley or liquor in which the grapes are dipped. By this method, two or three bunches of grapes are tied firmly together, while yet on the vine, and dipped into a hot lixivium or ley of wood-ashes. This disposes the grapes to shrink and wrinkle: and after this they are left on the vine three or four days, separated on sticks in a horizontal direction, and then dried in the sun at leisure. A portion of olive oil is generally mingled with the ley, and the wood-ashes of which the ley itself is formed are those of vine branches and tendrils. In Valencia, the ashes are formed of rosemary branches combined with vine twigs, and a little slacked lime is sometimes added.

It might at first thought be supposed, that, provided the temperature be equalized, it would matter but little whether the raisins were dried by the heat of the sun, or by that of a stove. But this is not the case; those dried by the former method acquire a sweet and pleasant taste; but those dried by artificial heat retain a latent acidity with the sweetness, which renders them much less agreeable.

There is a kind called raisins of Damascus, named from the capital city of Syria, in the neighbourhood of which they are cultivated. They are much used in the composition of ptisans, together with jujubes and dates. They are of a flattish shape, seeded, and nearly as large as the thumb; from which some conception may be formed of the extraordinary bulk of the grape when fresh. There have been instances known of bunches of these grapes weighing twenty-five pounds each. The flavour of the grape is faintish, and not very agreeable when taken alone.

The finest raisins, as we have already observed, are brought from Spain; but the next finest quality are brought from a very different quarter, viz., Smyrna, on the western coast of Asia Minor. It is stated by the agent of a commercial house at Smyrna, that dried fruit, comprising raisins and figs, occupy the attention of all Smyrna, more or less, and produce during the season great interest and activity. Figs are brought to market early in September, and raisins are ready for shipping early in October; the former are procurable only at Smyrna; the latter may be procured there also, but the shipments are generally made at Chesmé, Vourla, Carabourna, Usbeek, &c., from which ports the name of the raisin takes its origin. Large sums are frequently gained in fruit speculation; and when the demand in England is brisk, and the prices and quality good, it very seldom happens that any loss is sustained by the speculators. Some risk, however, is incurred, dependent on the damp or dry state of the raisins when shipped.

Mr. M'Farlane, when residing at Smyrna, gave a lively account of the traffic in figs and raisins at the ports of Smyrna and its neighbourhood. It does not fall within our plan to treat of figs in this place; but we must say a few words respecting their shipment from Smyrna, in order to understand the subsequent remarks concerning raisins. After speaking of the tormenting visitations of the mosquitoes, our traveller states that he found another annoyance at Smyrna almost as vexatious —this was the fig trade! This branch of commerce was then in full activity. The passenger could hardly stir in the streets for the long lines of camels loaded with figs; he could hardly move in the Marina for the drums of figs rolling to be shipped; and it was scarcely possible for one within doors to sleep after three o'clock in the morning, for the noise of the women and children employed in picking and packing figs. Figs were the subject of conversation among all classes—some sellers, some growers, some pickers and packers, some buyers, some shippers—all seemed to have some interest or other in the fig-trade.

When the traveller went from Smyrna to a small seaport town near it, called Chesmé, he met with another busy scene, which he thus describes:—

Driven from Smyrna by figs, I fell from Scylla on Charybdis*, at Chesmé: I found all the world engaged with *raisins!* There was scarcely room to land on the little quay, for the casks of fruit lying there for embarkation. The narrow streets were thronged with hamals, camels, mules, and asses, all carrying raisins; vast heaps of raisins were seen piled up in every magazine, and in the lower part of the wooden house where I was accommodated by the kindness of my friend Mr. W——, were regiments of casks and barrels, mountains of raisins, and about a hundred half-naked, bawling fellows, (Turks, Greeks, and Jews,) picking and packing raisins. If at Smyrna I had found every man's mind absorbed in sweetmeat, here it was worse. Chesmé has no other trade but these exports of raisins. The Franks go down there merely to ship the fruit; this they must do with the greatest expedition for the interest of the shippers.

Not only are the Smyrniotes active and bustling during this season; but even the indolent, slow-moving Turks seem to be affected with the raisin-fever at this period,—hurrying about in their papooshes in a manner seldom exhibited by them at any other period. The town of Chesmé owes its prosperity entirely to the exportation of raisins, which are grown in immense abundance in its neighbourhood, as may be well conceived from the fact that fourteen English vessels, three Austrian, and one American, took fruit (many of them, though large ships, whole cargoes,) during a few days that Mr. M'Farlane remained at Chesmé; and that with the exception of a small, fine species of raisins, called sultanas, which are shipped at Smyrna, nearly all the fruit that goes in England by the name of Smyrna raisins, is sent from Chesmé.

A word or two respecting the medicinal qualities of raisins. The chief employment of raisins in medicine is to flavour unpleasant mixtures, or for their demulcent properties. They partake in part of the quality of the grapes. Grapes, when fresh, are cooling, aperient, moderately nutritive, and demulcent: their use in the south of France is thought to contribute greatly to the amelioration which consumptive persons experience there, and in some instances their effect is so striking as to have given rise to the term "cure de raisins." The dried raisin is less acid, but more nourishing and more demulcent. It possesses all the soothing qualities of jujube, and is much lower in price. It may be easily made into a conserve, by removing the seeds, and beating the pulp into a thick mass. It has been recommended for persons with irritable throats, and a liability to winter coughs, that a portion of this conserve be put put into the mouth before going into the open air: this is said to be an excellent protective measure, by which cough is frequently prevented. If used in large quantity, raisins are apt to produce unfavourable effects on the system, since they are very subject to fermentation with juices of any kind. Dried currants contain more acid than raisins, and are therefore used medicinally under different circumstances.

But the medicinal employment of these dried fruits is very limited. Nearly the whole of the four hundred thousand hundredweights (raisins and currants together), consumed yearly in this country, are used in making puddings, pastry, wines, &c.

* *"Fall from Scylla on Charybdis."*—This expression is so often used by writers, that unless its origin be borne in mind, it must necessarily seem to the reader a useless introduction of hard words. Scylla is the name of a rock, situated in the Straits of Messina, which separate Sicily from the mainland of Italy. Charybdis is the name of a whirlpool, situated not very far from Scylla; and the ancient navigators found it extremely difficult to effect a passage between these obstacles; for in avoiding the rock, they were likely to be engulfed in the whirlpool. Thus it has come to be a sort of proverb, that when a person plunges into one misfortune or inconvenience in endeavouring to escape from another, he is said to "fall into Charybdis in avoiding Scylla."

EASY LESSONS IN CHESS.

Lesson II.

You must now learn the moves of the pieces and pawns; for which purpose, place your board in the proper position, which, you know, is with a white square at your right hand corner, and then place the king's rook on its square, the rest of the board being unoccupied. The move of the rook is always in straight lines, parallel with the sides of the board. In its present position this piece can be played to your adversary's king's rook's square, which square you know is the same as your K. R. 8th, or it may be played to your Q. R. square, from thence to Q. R. 8th square, thence to K. R. 8th, and so home again, thus taking four moves to go along all four sides of the board. The rook may also take a short as well as a long move. Its shortest move is one square forwards or backwards, or one square to the right, or one square to the left. In its present position it can neither move backwards nor to the right, because it is at home; and so also the queen's rook, when at home, can neither move backwards nor to the left: but place either rook on any but a rook's file, and you will find that it can move in three different directions: place K. R. on K. square, and you will find that it commands four squares to the left, three squares to the right, and all the seven squares in the king's file. Still in this position the rook cannot move backwards. But place K. R. on Q. 4th square, and you will find that it can now move backwards, but although it can move in four different directions, it does not command a larger number of squares than before. Remember that a piece is said to command a certain number of squares only when they are unoccupied. If, for example, your K. R. pawn be at K. R. 2nd square, the rook has no power whatever in a forward direction, but only to the left, where it commands seven squares; but if we place the K. Kt. at its square, the K. R. has no power whatever to move, and commands nothing. Remember also that a piece does not command or defend the square on which it actually stands, but only those squares to which it can be moved.

Your board being again unoccupied, place the king's bishop and the queen's bishop on their respective squares. The move of the bishop is always diagonal or oblique. Your king's bishop being on a white square, must always remain on that colour, because it cannot by any oblique move pass to a black square. The queen's bishop is on a black square, and remains on that colour during the whole of the game. Play your K. B. to K. R. 3rd, thence to your Q. B. 8th, thence to your Q. R. 6th, and thence home again. So also play your Q. B. to Q. R. 3rd, thence to your adversary's K. B., thence to your K. R. 6th, and thence home again. Play your K. B. to K. Kt. 2nd, thence to K. R. square, thence to your adversary's Q. R. This last move is the longest stride the bishop can take. Perform a similar exercise with your Q. B.

When the two bishops are at home, they each command seven squares. But play K. B. to Q. B. 4th square, or Q. B. to K. B. 4th square, and you will find their power to be greatly increased, each bishop commanding eleven squares. The bishop has the same privilege as the rook of moving through many squares or few, or of moving only one square.

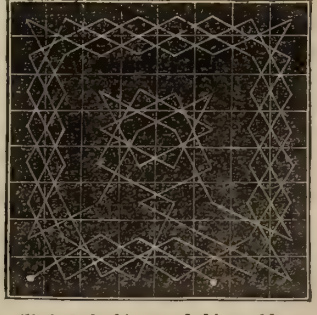
Now as we are strongly inclined to the opinion that the moves of the pieces at chess originated from two ancient games*, in one of which the men were played as we now play the rook, and in the other the moves were similar to those of our bishop, and that by a combination of the powers of these two pieces, the moves of the other pieces derive their origin, we have thought that a better understanding of the moves in the modern game might be had by first describing the powers of the rook and bishop, and then tracing to them the moves of the other pieces.

The king is allowed the shortest move of the rook and the shortest move of the bishop, but not both at once. Place your king on his square; he can then move to any one of the following squares: K. B. square, Q. square, K. 2nd square, Q. 2nd square, K. B. 2nd square. But if we place the king on one of the central squares, his power to move is increased. Place your K. on his fourth square; he then commands K. 3rd and 5th squares, Q. 3rd 4th and 5th squares, and K. B. 3rd 4th and 5th squares. Remember that your king can never be on a square immediately adjoining that on which your adversary's king stands.

The queen is allowed the move either of the rook or of the bishop, but not both at once. Place your queen on her square; she can move four squares to the right, three squares to the left; she commands seven squares of the queen's file, a diagonal to the left of three white squares, and a diagonal to the right of four white squares. You can therefore already form an idea of the great value of this the most powerful piece at chess.

The knight is the most remarkable of all the pieces; it is the only one that has the privilege of moving over the other pieces, and this it often does, under the guidance of a good player, in a remarkable manner, threading its way safely through its own and the enemy's ranks until it can form an attack on some distinguished piece, or mar an ingenious plot of the adversary. This piece is not only difficult to play well, but difficult also to resist, so that it is a deserved favourite among skilful players. The move of the knight consists of the shortest rook's move and the shortest bishop's move, both at once. For example, place your king's knight at home; he can move to K. R. 3rd square, *i. e.*, from K. Kt. square to K. Kt. 2nd, the shortest rook's move, and from K. Kt. 2nd to K. R. 3rd, the shortest bishop's move, or from K. Kt. square to K. R. 2nd, the shortest bishop's move, and from thence to K. R. 3rd, the shortest rook's move. Wherever we can combine the shortest move of the rook with the shortest move of the bishop, the knight can be played, provided the square to which you wish to play him be not occupied by one of your own pieces or pawns. But if such square be occupied by a piece or pawn of your adversary, the knight can capture it. When your K. Kt. is at home, he can be played to your K. 2nd square, or to K. B. 3rd square, or to K. R. 3rd square; but when the knight gets to the middle of the board his power is wonderfully increased. Place him on your K. 4th, for example, and you will find that he can be played to any one of eight squares. See if you can find out these squares, and write down their names correctly.

Should you find any difficulty in remembering the knight's move, the following exercise will fix it in your memory. It is one of those numerous solutions of the problem wnich requires the knight to be played to the sixty-four squares of the chess board in sixty-four leaps, without twice touching any one square†.



* See *Saturday Magazine*, Vol. XIX., pp. 165, 191.

† The reader will find the history of this problem, together with an easy method of solving it, and several remarkable details respecting the knight's move, in two articles in the *Saturday Magazine*, Vol. XIX. pp. 204 and 228.

The problem to which the annexed diagram is the solution is as follows:—*Begin the tour of the knight on king's bishop's square, and end on Q. R. square.*

The pawns have the shortest move forward of the rook when they do not capture, and the shortest move forward of the bishop when they do. But each Pawn is allowed to move either one or two steps forward at its first move, after which it can only move one step. Your rooks' pawns command only one square each, viz., K. or Q. Kt. third; the other six pawns command each two squares. Remember that all the *pieces* can be played backwards as well as forwards, to the right or to the left; but the *pawn* has a forward move only; it can never retreat from danger like the other pieces, but continues to advance until it reaches your adversary's royal line, when it is entitled to a reward which none of the pieces can claim: it is immediately promoted to the rank of a queen, or a rook, or a bishop, or a knight, as you may desire.

THE BENUAS OF MALACCA.

We made the land and entered the Straits of Singapore, running along by the coast of Malacca. The richness of the scene extends even to the water's edge, where the bright trees of all descriptions dip their branches in the waves, and the sweet and spicy odours render fragrant the air from the neighbouring shore, whilst in the background runs a line of broken mountains, of which Mount Ophir is the highest in the range.

The colouring of the sky, previously to and during a thunder-storm, is one of the grandest sights in these tropical climes; the cloud comes stealing along the heights, until it bursts over-head, not as in more northern latitudes, but in sheets of flames of different hues, shooting their brilliant and varied lights through the surrounding firmament.

Mount Ophir, from its name and gold-mines, excites a degree of interest in the traveller: in shape it resembles Mount Vesuvius, and for many miles at its base stretches a tract of forest, inhabited by wild beasts, and men even more savage than the animals themselves. The town of Malacca stands upon a point of land projecting at the end of a bay, and from its situation and buildings forms a picturesque object from the sea.

The mines in the mountains have at a distant period been worked upon a much larger scale than at present, the only people who now follow the trade being a few Chinese and Portuguese, upon whom the chiefs of the tribes levy a species of blackmail in return for the protection they afford. However, these chiefs are not able to defend them from the tribes that infest the jungle districts, which they have to traverse, in order to bring their hard-earned gold to the coast; and many are murdered on their journey, and hundreds robbed, so that the traffic is one of great danger and uncertainty. If the stories related by residents of the habits and customs of this nation be even founded on fact, the tales of the wild men of the woods are scarcely exaggerated.

A description of their habits, given me by a gentleman who was for a long time a resident in the country, and a traveller amongst the people, is so extraordinary as almost to exceed belief, but as it has since been repeated by others, whose authority is likewise undoubted, I may venture to record it.

One of the tribes that infest the jungle, and are supposed to be the aborigines of the country, are the Benuas. They seldom come down to the more civilised parts of the continent, unless caught and forcibly detained. Their stature is rarely above four feet four; and when the children reach the age of manhood, they destroy their parents, to make way for their own generation; and the skulls of their deceased parents are the only tokens that they keep to remind them of the authors of their being, and their unnatural fate. So far I believe there is truth in the stories: and as the larger species of monkeys are found in the country, although not the ourang-outang of Borneo, it has given rise to the many absurd tales that the invention or credulity of travellers has thrust upon the public.—Lord Jocelyn's *Campaign in China.*

Felicity shows the ground where Industry builds a fortune.—Sir H. Wotton

CORAL REEFS.

Few natural objects are so well calculated to excite wonder in the human mind as the coral constructions, in all their Protean forms, that surround the greater number of Polynesian islands, and which demonstrate so perfectly the power of nature to effect her vast designs through apparently feeble and inefficient agents. It requires, indeed, an intimate acquaintance with the habits of the lithophites, and ocular proof of their labours, to credit what stupendous submarine reefs, and islands many miles in compass, are indebted for at least their entire visible structure, to the secretory economy of these tiny architects.

In such examples Raiatéa is not deficient. On the contrary, she is indebted for a large share of her natural beauties, as well as commercial advantages, to the coral fabrics which surround her shores. These chiefly obtain in the form of reefs; of which the nature and use may be best understood by considering them under their natural divisions of a *barrier* and a *shore reef.* The former encircles the island as a breakwater or sea-wall, at the distance of one and a half or two miles from the land; presenting a precipitous face to the ocean, to receive the assault of its billows, but encroaching in a superficial and capricious manner upon the lagoon water it incloses. The shore-reef is continuous with the land around the entire coast, and stretches into the sea to a variable, but usually to a very considerable distance. Its greater portion is covered with shallow water, which in many parts does not exceed, and is often less than, a foot in depth; its outer margin shelves irregularly, and terminates abruptly in a deep channel of blue water. This channel (which is also continued round the island) furnishes a natural division between the two principal reefs, as well as a convenient passage for navigation. Coral islets, shoals, or whatever other form the madreporic rock may assume, can be distinctly traced to one or the other of these apparently distinct reefs, but never occur as the productions of both conjointly.

The outer or *barrier reef* resembles a wall no less in its structure than in office: unlike the friable and arborescent material we commonly associate with the name of coral, the rock of which it is composed is hard, compact, and amorphous, bearing much resemblance to a very firm cement; and it is only on its shoals, extending towards the land, that we notice the elegant form of the tree-coral, contrasting so strongly with the rocky and unornamental structure on which it is planted, as to justify a doubt if both are constructed by the same animals. The summit of this reef is flat, several yards in breadth, but little raised above the level of the sea, and washed by a heavy surf, which breaks against its sea-aspect, courses over its level surface, and falls gently, and as it were by a line of cascades, into the placid basin on the opposite side. At ebb tide, when the surf is less in amount, this reef is partly dry and accessible; but when the tide is high, or the weather tempestuous, the sea, raised into lofty and magnificent arches, beats over the rocky barrier with terrific grandeur, and with a rolling or thundering sound, which may be heard, on a tranquil night, at the distance of several miles. To persons unaccustomed to such scenes, nothing is more deeply and agreeably impressive than the view of a majestic surf thus lashing the coast of an island opposed to the play of a mighty ocean, although it is incomprehensible or revolting to a sailor to hear beauty associated with a scene which only conveys to his mind anxious and unpleasant reflections.

A curious and mysterious feature in the construction of the barrier reef is presented in the occasional apertures that exist in its fabric, and which are of sufficient breadth and depth of water to permit ships to sail through them with facility.

The *shore reef* is chiefly composed of amorphous rock, or block-coral, though tree-coral is also abundant upon it, as well as extensive beds of sand. In many parts, where the water is deep, it presents a submarine picture of extreme beauty: extensive coral groves, planted in beds of smooth and white sand, and mingling hues of pink, blue, white, and yellow, appear through the transparent sea; numerous small fish, of brilliant colours, glide over the sands, thread the labyrinths of the coral branches, or, when alarmed, dart rapidly for shelter into the recesses of the stony thickets; the whole affording a peculiarly pleasing and almost kaleidoscopic effect. —Bennett's *Whaling Voyage round the World.*

While men have various passions, feelings, tastes,
'Tis clear they will not, cannot, think the same,
Who therefore would please all, his time but wastes;
Who firmly does his duty has least blame.

SPARE MINUTES.

MEDITATED RESOLVES AND RESOLVED MEDITATIONS.

The speech of the tongue is best known to men; God best understands the language of the heart. The heart without the tongue may pierce the ears of heaven, the tongue without the heart speaks an unknown language. No marvel then, if the desires of the poor are heard, when the prayers of the wicked are unregarded. I had rather speak three words in a speech that God knows, than pray three hours in a language that He understands not.

Meditation is the womb of our actions, action the midwife of our meditations. A good and perfect conception, if it want strength for the birth, perisheth in the womb of the mind, and, if it may be said to be born, it must be said to be still-born. A bad and imperfect conception, if it hath the happiness of a birth, yet the mind is but delivered of a burthen of imperfections, in the perfection of deformity, which may beg with the cripple at the gate of the Temple, or perish through its imperfections. If I meditate what is good to be done, and do not the good I have meditated, I lose my labour, and make cursed my knowledge. If I do the thing that is good, and intend not that good that I do, it is a good action, but not well done. Others may enjoy some benefit, I deserve no commendations. Resolution without action is a slothful folly, action without resolution is a foolish rashness. First, know what's good to be done, then do that good being known. If forecast be not better than labour, labour is not good without forecast; I would not have my actions done without knowledge nor against it.

It is the folly of affection not to reprehend my erring friend, for fear of his anger; it is the abstract of folly, to be angry with my friend for my error's reprehension. I were not a friend, if I should see my friend out of the way, and not advise him: I were unworthy to have a friend, if he should advise me (being out of the way) and I be angry with him. Rather let me have my friend's anger than deserve it: rather let the righteous smite me friendly by reproof, than the precious oil of flattery or connivance break my head. It is a folly to fly ill-will, by giving a just cause of hatred. I think him a truer friend that deserves my love than he that desires it.

Health may be enjoyed; sickness must be endured: one body is the object of both, one God the Author of both. If then He give me health, I will thankfully enjoy it, and not think it too good, since it is his mercy that bestows it: if He send sickness, I will patiently endure it, and not think it too great, since it is my sin that deserves it. If in health, I will strive to preserve it by praising of Him: if in sickness, I will strive to remove it by praying to Him. He shall be my God in sickness and in health, and my trust shall be in Him in health and in sickness. So in my health I shall not need to fear sickness, nor in my sickness despair of health.

[Arthur Warwick. 1637.]

Now go and brag of thy present happiness, whosoever thou art; brag of thy temperature, of thy good parts; insult, triumph, and boast: thou seest in what a brittle state thou art, how soon thou mayst be dejected, how many several ways, by bad diet, bad air, a small loss, a little sorrow or discontent, an ague,&c., how many sudden accidents may procure thy ruin, what a small tenure of happiness thou hast in this life, how weak and silly a creature thou art. *Humble thyself therefore under the mighty hand of God*, know thyself, acknowledge thy present misery, and make right use of it. *Let him that standeth take heed lest he fall.* Thou dost now flourish, and hast goods of body, mind, and fortune; but thou knowst not what storms and tempests the evening may bring with it. Be not secure then; *be sober and watch*, if fortunate and rich; if sick and poor, moderate thyself—I have said.—Burton's *Anatomy of Melancholy.*

Clouds of affection from our younger eyes,
Conceal that emptiness which age descries;
The soul's dark cottage, battered and decayed,
Lets in new light, through chinks which time has made.

Stronger by weakness wiser men become,
As they draw near to their eternal home;
Leaving the old, both worlds at once they view,
That stand upon the threshold of the new.—Waller.

APSLEY HOUSE,

THE TOWN RESIDENCE OF THE DUKE OF WELLINGTON.*

There is no nation in the world of which the nobles and wealthier gentry inhabit mansions, both in town and country, within and around which all the elements of substantial comfort and useful elegance and true taste more perfectly abound than in England. In foreign countries you may find palaces, of which the exteriors offer far more elaborate ornament—and this remark applies especially to the Italian capitals, where, by the bye, such palaces are falling fast into decay. But in point of solid convenience—not unmixed, here and there, with exquisite specimens of architectural skill—commend us to the town and country-houses of our own aristocracy. A bare enumeration of the more distinguished of the former of these would recal to the remembrance of our London readers, visions of surpassing grandeur. But, as we write for the benefit of that larger circle of our friends to whom the scenes of fashionable life may not be quite so familiar, we think it best to treat this most interesting subject in detail.

The first mansion of note and character which attracts the attention of the stranger who may begin his survey of London from the west, is Apsley House—the town residence of him whom all England, and, indeed, the civilized world, delights to honour, the greatest man of his age; the most illustrious name in English history. Planted upon the edge of Hyde Park, so as to connect itself, in some sort, with the triumphal arch by which the park is entered, Apsley House bears testimony both within and without, to the admirable taste, as well as the sound architectural judgment of its illustrious owner. For, unless our memory be at fault, the Duke of Wellington may fairly lay claim to the distinction of having, to a great extent, planned his own noble palace; and the matchless comfort that prevails within, not less than the classic elegance which distinguishes the exterior of the pile, prove that had not fortune made him a great commander and a great statesman, he might have become, with very little study, a great architect.

Apsley House is separated from Piccadilly by a range of lofty bronze gates, which rest upon pillars of fine stone, of the simplest Corinthian order. These gates—three in number, though the outer one is seldom, we believe, opened, are all solid, the fluted pillars, or bars of each, being embayed in a shield of metal, and ending in chapiters of curious workmanship, such as give to the whole an air both of solidity and lightness. Towards the park there is a plain iron railing, within which a hedge of evergreens is planted; while from Hyde Park gardens the Duke's little domain is separated by an unostentatious wooden fence. Thus the princely palace stands—completely embedded within its own inclosure; insomuch, that, except by the few persons who may linger among the shrubberies that skirt the lawn in the rear, nothing of what passes in or around the mansion can, without a rude effort, be observed.

Having rung the bell, and had one of the gates rolled back, by a fine hale old soldier, whom his Grace has promoted to the situation of porter, you enter a narrow court-yard, paved, not with flags, but with common paving-stones. You obtain, at the same time, a perfect view of the whole front of the mansion—the simple elegance of which agrees well with your ideas of the habits and character of its owner. Opposite to you is the main entrance—a fine door-way, surmounted by a plain, but broad screen, which rests upon arches, and is itself the foundation from which the elegant portico that is visible from Piccadilly springs. This latter is of the Doric order, or rather of that composite style which unites the simplicity of the Doric with the lightness of the Ionic. You approach the great door by a flight of broad and low steps, and passing under the portal find yourself in a hall, of which you are not tempted to say more than that it is extremely comfortable, being square, not over large, and carpetted over its marble flooring. To the right of this again, is the waiting room, a commodious enough apartment, yet perfectly plain, from which, as well as by passing through a swing door in front, you are introduced into the suite of rooms that occupy the rest of the ground-floor.

The rooms in question are not more than three in number. That in the centre is usually occupied by his Grace's private secretary. That on the right, is the Duke's own room: that on the left, the state dining-room. The Duke's room is, according to his usual practice in such matters, by far the most unpretending of the whole. In point of size it is, doubtless, larger than his secretary's room; but its principal

* From the *John Bull.*

ornaments are a bookcase at one extremity, and piles of boxes everywhere else, carefully docketed, and made upon a principle of which the Duke is the author. In each of these are stowed away a whole year's worth of letters, as well those received, as copies of all that have been despatched. His table is a large one, which folds up in the middle, and besides the usual garnishing of drawers which belong to things of the sort, is provided with a sliding cover, on drawing down which over his papers he is enabled, by means of a spring lock, to render all secure in a moment. There are, besides, two or three plain tables in the room, with chairs, sofas, and other pieces of necessary ornament, and over the chimney-piece is a likeness of Napoleon. In other respects, however, all is plain and without pretension. The carpet is, in pattern, the same that you find throughout the house. The window curtains correspond with those in the rooms beyond, and the look-out is upon the lawn behind, where his Grace is accustomed at times to take snatches of exercise. Of course the Duke's room has its own outlet, as well as a direct communication with that in which his secretary sits; and the good-humoured, yet sharp tone in which the word "Algy" is often heard in the latter, proves that the double doors that divide them are yet pervious to the human voice when rightly pitched.

In the secretary's room the objects most conspicuous are the china vases, elaborately painted and gilded, which were presented to the Duke at the close of the war, by the late king of Prussia. They are very beautiful things, and are seen to great advantage through the glass cases, which occupy one side of this apartment. In other respects the room is simple enough. Indeed, from its position as well as size, it would appear to have been originally intended as a sort of ante-room or hall, for there is a communication from it to the dining-room, by which, indeed, as often as the latter is used, the guests make their way to the festive board. A plain library table, an adequate supply of chintz-covered chairs, a proportion of boxes docketed like those in the Duke's sanctum, and green silk hangings, make up the sum of its furniture. Like every other apartment in the house, it is warm and comfortable. Its grate is of polished steel, its chimney-piece of fine white marble.

Of the large dining-room, which is never used except on occasions of more than ordinary state, a brief description is all that seems necessary to be given. Like the dining-rooms of our aristocracy in general, it is laid out more for comfort than show. To be sure, the profusion of foreign china—gifts from crowned heads, which, like that in the secretary's room, fills the glazed mahogany cases with which the walls are set round—offers an endless variety of objects that demand and secure attention. But were these removed, the stranger would come only to this conclusion, that the Duke's dining-room was of spacious dimensions, and every way fitted for the exercise of a princely hospitality. We cannot undertake to say what are the precise dimensions of this noble hall, but we do not think that we overrate its capacity when we say that eighty persons might dine in it without the smallest crowding or inconvenience.

Having thus taken a survey of the basement story, we pass to the grand staircase, of which we are bound to observe that, in its position rather than its construction, it exhibits the only glaring error that is observable in the construction of the house. It is quite obscured and hidden at its base. You do not know that you are approaching it till you open a door, either from the waiting-room or the Duke's own room, and then you come suddenly upon it. It resembles, in fact, the shaft of a well—you stand at the bottom and are surprised to see that a spiral and elegant staircase is twisting over you. Yet there stands Canova's colossal statue of Napoleon—a piece of art which is, we suspect, without a rival in England, and we may venture to add, laying one or two statues aside, unsurpassed throughout the world. What a noble figure it is—how lifelike, how well-nigh divine! Had it belonged to Athenians in the days of yore, that imaginative people would have built a temple for its reception, and paid to it the same honours that they paid to Minerva herself.

We now ascend the light and elegant staircase, by which we are conducted to a corridor, whence, all round the area of the mansion, branch off a suite of rooms, which have scarcely any parallel in London. These, opening one into the other, are the smaller dining-room, the ball-room, the drawing-room, and the picture-gallery, all of them furnished with admirable taste, in a manner perfectly uniform, and gilded and ornamented to a degree which dazzles, without oppressing the spectator. The drapery in these apartments is all of yellow silk, done up with rich gold tassels. The Brussels carpets are of a small and tasteful pattern; the couches, chairs, sofas, and ottomans correspond with the hangings, and the walls and ceiling, in spite of their elaborate gilding, are so coloured as to set off to the greatest advantage the masterpieces of painting which constitute the principal ornament of Apsley House. Nor can we undertake, within the limits that are at our command, to speak of these. You have four or five Murillos, of first-rate value. You have Rubenses, Correggios, a Titian or two, Annibal Carracci, Salvator Rosa, Vandyke, Wouvermans, and, in short all the great masters of the Italian, Spanish, Dutch, and Flemish schools, mixed up with the most exquisite productions of the pencil, both in France and in England; for, side by side with the most renowned of the olden names, you trace those of our own Sir Joshua, of Lawrence, and of Landseer; while David has contributed more than one gem to this collection, which, though not the largest, is perhaps the most faultless that is to be found in any private house in Great Britain. But, one circumstance will, we are sure, strike the visitor as not more remarkable than it is in good taste—portraits of Napoleon are multiplied everywhere, insomuch, that while Emperors of Russia and of Austria, Kings of Prussia, France, and even England, greet you by units, or, at the most, by pairs, you find yourself confronted in different parts of the house by six Napoleons at the least.

It is not worth while, would our space permit, to describe the less conspicuous portions of this noble mansion. There are suites of rooms everywhere—one of which used to be occupied by the Marquis of Douro previous to his marriage, while another is described as Lord Charles's rooms. They are, like the lodging apartments in general, comfortably but plainly fitted up. Neither have the domestics a right to complain that their convenience has in any particular been neglected. But the Duke's own room is here, as it is elsewhere, a mere tent. The bed is the same which he used to occupy when in the field, and all things are plain—we had almost said austere—around it. His Grace prefers, and we think wisely, the German quilt to our English blankets. He sleeps without curtains, and can scarcely, we should think, turn round in his narrow bed. Indeed we have heard that his language in reference to that matter is, that "when a man thinks of turning, it is time he were up." His habits, too, are all early, and temperate—yet does he not try his constitution too much? We wish that he would give that magnificent mind more rest, and eat more frequently than he does.

We must not conclude this hasty notice of Apsley House without alluding to the stables. They are all under ground; and as the entrance is by a sort of sloping shaft, which opens upon Piccadilly, so is light admitted by means of small barred windows, that are little, if at all, raised above the level of the garden behind.

Finally, we may observe of the general bearing of the mansion, that there is an air of quiet elegance about it, which would satisfy the spectator, were he even ignorant of the name of the owner, that it belonged to no common man. The roof is flat. The windows are of an order to correspond with the Grecian portico that adorns the front. The material of which it is built is the richest Caen stone; and it has retained its hue so well for a quarter of a century that we see no reason to distrust its continuing to do so for at least a century to come. Nay, the iron blinds themselves, which the madness of an abused people compelled the Duke to put up, have been, in his hands, rendered, if not ornamental, certainly the reverse of disfiguring. We are told that when the conversation happens to turn from them to the events that caused them to be placed where they now hang, the Duke only laughs. "They shall stay where they are," is his remark, "as a monument of the gullibility of a mob, and the worthlessness of that sort of popularity for which they who give it can assign no good reason. I don't blame the men that broke my windows. They only did what they were instigated to do, by others who ought to have known better. But if any one be disposed to grow giddy with popular applause, I think that a glance towards these iron shutters will soon sober him."

LONDON:
JOHN WILLIAM PARKER, WEST STRAND.
Published in Weekly Numbers, price One Penny, and in Monthly Parts, price Sixpence.
Sold by all Booksellers and Newsvenders in the Kingdom.

THE

Saturday Magazine.

No. 627 APRIL 9TH, 1842. { PRICE ONE PENNY.

THE NEILGHERRY HILLS, AND THEIR INHABITANTS. I.

THE KOONOOR PASS, NEILGHERRY HILLS

THERE is a small mountainous district in the southern part of India, which has attracted a good deal of attention within the last few years, from the circumstance that the inhabitants present many striking points of difference from every other race in the Indian peninsula. Captain Harkness, of the Madras Army, passed a considerable time among these mountaineers; and it is from his animated account of them that Europeans have derived the chief part of their acquaintance with this people.

There are two long ranges of mountains extending down India, called *Ghauts;* one going nearly parallel with the Eastern coast, and called the Eastern Ghauts; the other parallel to the western coast, termed the Western Ghauts. These two ranges incline towards each other southward, and at length meet in a nucleus or cluster which forms the Neilgherry Hills. An irregular four-sided space, about forty miles long, and fourteen wide, is almost wholly occupied by a cluster of hills about five thousand feet in height. The atmosphere surrounding these hills imparts to them a singularly blue tint, which has given name to the hills themselves, *nila* meaning blue, and *giri*, hill; from which "Neilgherry" has by a slight corruption been formed.

The base of the cluster of hills is surrounded by a zone of thick jungle, extending into the plains, and it is almost encircled by two small rivers. The general surface of the district is mountainous, composed of ridges stretching out in almost every direction, which are commonly made up of lesser hills and knolls. Among these knolls are many delightful valleys; and where the mountain ridges run close to one another, deep ravines often occur. The hills are divided into four districts or *naads*, called Parunganaad, Meykanaad, Koondanaad, and Tudanaad; together with a small district occupied as a European settlement, and called Oatacamund. This latter is a beautiful spot, occupying the centre of the crest, and diversified by alternate successions of hill and dale. At the bases of the higher hills, and on the lesser hills and knolls in their vicinity, a number of pretty white buildings give relief to the rich verdure; above these, and in the clefts which partially separate mountain from mountain, shoot up lofty and umbrageous trees; and beyond these, in succession, rise the higher peaks, covered to the very summit with the richest pasture.

Our cut represents the Koonoor Pass, with the plains of Coimbatoor in the distance, through which a small silvery stream threads its way. The rugged steeps of the mountain on the right,—in one spot assuming all the various appearances which wood and water can present, and in another exposing undulating pastures to the action of the sun,—sweep down to a cataract at the

bottom of the ravine. Upon its summit is a little fort, commanding all the surrounding country: it was built by Hyder Ali, the Sultan of the neighbouring kingdom of Mysore; and was used by him, as well as by his successor Tippoo Sultan, as a place of confinement for state prisoners. The hills present many grand and beautiful views, similar to that here represented.

It is, however, on account of the inhabitants themselves, rather than the district which they inhabit, that this small patch of country is interesting. Perhaps in no other part of the world could we find within a district of equal extent, tribes differing so much one from another, and from the other inhabitants of the surrounding country. Around the foot of the mountains, and for a short distance within the forests extending from their base into the plains, live a race of people commonly known by the name of *Erulars*. Above these, at a height varying from one to two thousand feet, in the clefts of the mountains, and little openings of the woods, live another race called *Curumbars*. The next tribe, occupying many of the elevated parts of the hills, are called *Cohatars*. Another tribe, or rather assemblage of inhabitants, comprising seven or eight classes of Hindoos who have migrated to these mountains within a certain period, are known by the general name of *Badagars*. Lastly, the smallest, but in many respects the most remarkable tribe, is composed of the *Tudars*, supposed to be the original inhabitants of the mountains, or at least of longer standing than any of the other tribes now found there. This tribe is the one which we shall first describe.

The whole of the Tudar tribe, including both sexes and all ages, is supposed by Captain Harkness not to exceed six hundred in number. The men are generally above the middle height, athletic, well-made, and remarkable for their bold bearing, and open and expressive countenances. They never wear any covering to the head, whatever the weather may be, but allow the hair to grow to a length of about six or seven inches; parted from the centre or crown, it forms into natural bushy circlets all round, and at a short distance more resembles some artificial decoration, than a simple covering of hair. They have large, full, and sparkling eyes; a form of nose partaking of that which we term the Roman; and an expression of countenance which, while it often exhibits great gravity, seems ever ready to assume a cheerful and good-humoured turn, a circumstance which distinguishes them in a marked character from the other natives of India. They usually wear small gold earrings; and many decorate the neck with a studded chain of silver, and the fingers with rings of the same material. Their dress consists of a short under garment, folded round the waist, and fastened by a girdle; and of an upper one or mantle, which covers every part except the head, legs, and occasionally the right arm. These are left bare, the folds of the mantle terminating with the left shoulder, over which the bordered end is allowed to hang loosely. When in a recumbent or sitting posture, this mantle envelopes them entirely; and it thus becomes their clothing by night as well as by day. They neither wear sandals nor any other covering for the feet and legs. They carry no weapon of defence; but generally have a stick or rod in the right hand, to direct their herds.

The females have a stature proportionate to that of the men, but their general complexion is some shades lighter. With a feminine but expressive cast of features, their interesting appearance is much aided by long black hair, which flows in luxuriant tresses over the neck and shoulders. They have a modest and retiring demeanour, but are at the same time free from the ungracious and menial-like timidity of the generality of the sex in most parts of India; and they enter into conversation with a stranger in a manner very unusual in that country, but quite consistent with European notions. They wear necklaces of twisted hair or black thread, with silver clasps, and beads, from which are suspended bunches of cowry-shells, which hang down from the back of the neck between the shoulders. On the arms, just above the elbow, they wear a pair of brass armlets; on the wrists, silver bracelets; on the fingers and thumbs of each hand, a number of rings of various descriptions; and round the waist, a zone of chain-work, formed either of silver or brass. Their upper garment or mantle resembles that of the men; but it is worn differently, and, reaching to the feet, envelopes the whole frame. Captain Harkness describes this attire as giving the women an ungraceful and mummy-like appearance; but their intelligent and lively manners compensate for the ungainliness of their garb.

The life of the Tudars being pastoral, they do not congregate in towns or villages; but every family lives separately in a cluster of dwellings called a *morrt*. In each of these morrts is a building superior in size, construction, and appearance, to the others, at a short distance apart from them, and surrounded by a wall. In this are carried on all the processes of the dairy, such as making butter, converting it into the beverage called *ghee*, &c.; and this building is regarded with a singular kind of reverence, which renders the inhabitants unwilling that a stranger should enter it. The huts which form the remaining buildings of the morrt resemble in appearance the tilt of a wagon. The roof, formed of neatly constructed thatch, is supported on posts, and on thick, rude, short planks. Each hut is about twelve feet in length, eight in breadth, and seven in height, from the ground to the ridge of the roof; and at one end is a little door less than a yard high by two feet broad. At a short distance is an area, of about forty or fifty yards diameter, inclosed with a wall of rude stones piled one on another without cement, in which the herd is secured at night. As the families migrate from one morrt to another, or from one mountain-side to another, according as the seasons change, or the pastures fail, and as they cultivate no grain or vegetable of any description, it follows that their dwellings have none of the appearance common to settled residences.

It might be supposed, that as this people are neither warlike nor agricultural, their attention would be directed to the rearing of many kinds of animals; but Captain Harkness states that neither poultry, pigs, sheep, or goats, are bred among them; that the ox or the cow—held in so much estimation by the natives of India generally—is not considered by them worth keeping; that they never keep dogs; and that the buffalo is the only animal the rearing of which is an object of their care. This is partly explained by the circumstance, that the buffalo is an animal to which this climate seems particularly adapted; in the plains they are greatly tormented by flies, but among these hills they roam unmolested in herds of one or two hundred, feeding on a rich and luxuriant herbage. Almost the only articles which the Tudars produce are butter and ghee, both obtained from the milk of the buffalo.

The routine of the daily life of the Tudars is described as being somewhat as follows. As soon as the sun is risen, the herd is liberated from the inclosed area; and the calves, which during the night had been confined in a separate pen, are allowed to join them. The milking is now commenced by some of the males of the family, who previously go through certain superstitious purifications to qualify them for this duty. The herd is then allowed to graze about in the vicinity of the morrt; and the dairymen proceed to convert into butter the milk which had been drawn off the preceding evening. The new milk is divided into two portions, one to make butter some hours afterwards, and the other, aided by the buttermilk of the preceding evening, to make a beverage of which the whole family partake, and of which the quan-

tity is large enough to last out the day. Some members of the family, generally the males, now drive out the herd to graze at a distance: the females remaining at home to arrange and clean the dwellings; to attend the young children; to make their mantles; and to clean, pound, and parch, the meal which had been obtained from some of the other tribes. Any of the men or boys who have not followed the herd, now fetch the water required for domestic purposes, or proceed to the neighbouring forest for fire-wood. About noon the herd is brought back to the vicinity of the morrt; and all those who followed it return home, except one or two left to take charge of the herd. The dairymen now make butter from the milk set aside in the morning, which has by this time become curdled; and also clarify the butter previously made, to convert it into *ghee*. Towards evening the herd draw together around the morrt; and as they approach the inclosure, the whole of the family, male and female, make them a kind of obeisance, by bringing up the right hand to the head, and extending it in an open manner. By this time the evening repast, consisting of different preparations of milk, meal, parched grain, and butter, has been prepared; and the family, after partaking of it, retire to rest.

The Tudars are divided into two classes or branches; the one called *Peikis* or *Terallis*, who are competent to hold all sacred offices; the other *Kutas* or *Tardas*, who are competent only to hold minor ones within their own particular families, and who may be considered as the lay class. Till within the last few generations, these two branches kept themselves quite distinct, and never intermarried; but since that period, intermarriages have taken place, and the progeny of these are called *Mookhs*, a general term for children or descendants.

The ordinary kind of life led by the Tudars is certainly an indolent one; their habits being rather slothful, except when acting from peculiarly-exciting causes, on which occasions they show much energy, and undergo great fatigue. They are almost totally unacquainted with the luxuries of life, not knowing even the use of salt; yet, notwithstanding these evidences of a low state of civilization, there is something in their general character which commands respect and even esteem.

SINGULAR ANECDOTE.

About the year 1706, I knew one Mr. Howe, a sensible, well-natured man, possessed of an estate of seven or eight hundred a year. He married a young lady of a good family in the west of England, her maiden name was Mallet; she was agreeable in her person and manners, and proved a very good wife. Seven or eight years after they had been married, he rose one morning very early, and told his wife he was obliged to go to the Tower to transact some particular business: the same day, at noon, his wife received a note from him, in which he informed her he was under a necessity of going to Holland, and should probably be absent three weeks or a month. He was absent from her seventeen years, during which time, she neither heard from him nor of him. The evening before he returned, whilst she was at supper, and with some of her friends and relations, particularly one Dr. Rose, a physician, who had married her sister, a billet, without any name subscribed, was delivered to her, in which the writer requested the favour of her to give him a meeting, the next evening, in the Bird-cage Walk, in St. James's Park. When she had read her billet, she tossed it to Dr. Rose, and laughing, "You see, brother," said she, "as old as I am, I have got a gallant." Rose, who perused the note with more attention, declared it to be Mr. Howe's hand-writing. This surprised all the company, and so much affected Mrs. Howe, that she fainted away; however, she soon recovered, when it was agreed that Dr. Rose and his wife, with the other gentleman and ladies who were then at supper, should attend Mrs. Howe, the next evening, to the Bird-cage Walk. They had not been there more than five or six minutes, when Mr. Howe came to them, and after saluting his friends and embracing his wife, walked home with her, and they lived together in harmony from that time to the day of his death. But the most curious part of my tale remains to be related. When Howe left his wife they lived in Jermyn street, near St. James's Church; he went no farther than to a little street in Westminster, where he took a room, for which he paid five or six shillings a week, and changing his name, and disguising himself by wearing a black wig, (for he was a fair man,) he remained in this habitation during the whole time of his absence*. He had had two children by his wife when he departed from her, who were both living at that time; but they both died young in a few years after. However, during their lives, the second or third year after their father disappeared, Mrs. Howe was obliged to apply for an act of parliament to procure a proper settlement of her husband's estate, and a provision for herself out of it during his absence, as it was uncertain whether he was alive or dead: this act he suffered to be solicited and passed, and enjoyed the pleasure of reading the progress of it in the votes, in a little coffee-house, near his lodging, which he frequented. Upon his quitting his house and family in the manner I have mentioned, Mrs. Howe at first imagined, as she could not conceive any other cause for such an abrupt elopement, that he had contracted a large debt unknown to her, and by that means involved himself in difficulties which he could not easily surmount; and for some time she lived in continual apprehensions of demands from creditors, of seizures, executions, &c. But nothing of this kind happened; on the contrary, he not only left his estate quite free and unincumbered, but he paid the bills of every tradesman with whom he had any dealings; and upon examining his papers, in due time after he was gone, proper receipts and discharges were found from all persons with whom he had any manner of transactions or money concerns. Mrs. Howe, after the death of her children, thought proper to lessen her family of servants, and the expenses of her housekeeping; and therefore removed from her house in Jermyn street to a little house in Brewer street, near Golden square. Just over against her lived one Salt, a corn-chandler. About ten years after Howe's abdication, he contrived to make an acquaintance with Salt, and was at length in such a degree of intimacy with him, that he usually dined with Salt once or twice a week. From the room in which they ate, it was not difficult to look into Mrs. Howe's dining-room, where she generally sate and received her company; and Salt, who believed Howe to be a bachelor, frequently recommended his own wife to him as a suitable match. During the last seven years of this gentleman's absence, he went every Sunday to St. James's Church, and used to sit in Mr. Salt's seat, where he had a view of his wife, but could not easily be seen by her. After he returned home, he never would confess what was the real cause of such a singular conduct; apparently there was none. But whatever it was, he was certainly ashamed to own it.

Dr. Rose has often said to me, that he believed his brother Howe would never have returned to his wife, if the money which he took with him, which was supposed to have been one or two thousand pounds, had not been all spent†. And he must have been a good economist, and frugal in his manner of living, otherwise his money would scarcely have held out; for I imagine that he had his whole fortune by him, I mean what he carried away with him in money or bank-bills, and daily took out of his bag, like the Spaniard in Gil Blas, what was sufficient for his expenses.—Dr. King's *Anecdotes of his Own Times.*

* London is the only place in all Europe where a man can find a secure retreat, or remain, if he pleases, many years unknown. If he pays constantly for his lodging, for his provisions, and for whatever else he wants, nobody will ask a question concerning him, or inquire whence he comes, or whither he goes.

† And yet I have seen him after his return addressing his wife in the language of a young bridegroom. And I have been assured by some of his most intimate friends, that he treated her during the rest of their lives with the greatest kindness and affection.

Cowper, the poet, wrote to a friend who had left off wearing a wig: "I give you joy of your own hair. No doubt you are a considerable gainer by being disperiwigged. The best wig is that which most resembles the natural hair; why then should he that has hair enough of his own, have recourse to imitation? I have little doubt but that if an arm or a leg could have been taken off with as little pain as attends the amputation of a curl or a lock of hair, the natural limb would have been thought less becoming, or less convenient, by some men, than a wooden one, and been disposed of accordingly."

THE COMMON MANGLE.

THE CHINESE MANGLE.

THE common mangle is a well-known machine, and of great importance to the laundress, as forming a quick and economical method of smoothing the larger articles of linen and cotton furniture, table cloths, &c., which cannot so conveniently be done by the use of heated irons. Yet there is a very great amount of labour required in the working of it as ordinarily constructed, and it may not be unacceptable to our readers to be made acquainted with some ingenious attempts to improve this useful domestic machine.

Most persons are aware that the common mangle consists of an oblong rectangular wooden chest, filled with stones, which load it to the degree of pressure that it should exercise upon two cylinders on which it rests, and which by rolling backwards and forwards over the linen spread upon a polished table underneath, render it smooth and level. Until about thirty years ago, the chest was moved backwards and forwards on the rollers by means of a handle attached to an upper roller or windlass, to which straps from each end of the moving box were attached. In this case the linen was wrapped round the rollers, and the motion of the heavy chest had frequently to be arrested and changed. The excessive labour required for this purpose led to the important improvement effected by Mr. Baker, of Fore Street, London, by which the unwieldy chest was moved with great facility backwards and forwards, by a continuous motion of the handle in one direction; and by the addition of a fly-wheel to equalize the motion, a great amount of muscular exertion was saved. This invention is extremely ingenious, and deserves a farther notice.

Fig. 1.

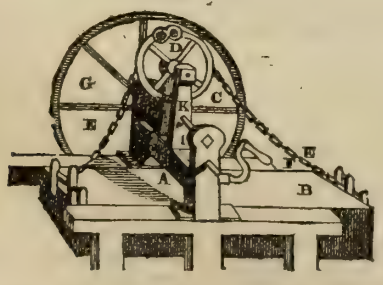
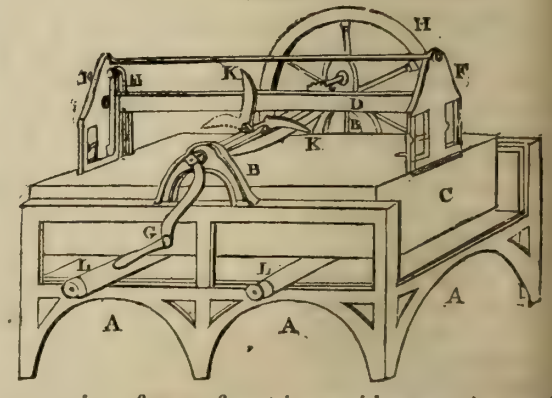


Fig. 1, will give the reader an idea of this improvement, A, is a bridge of cast iron passing over the top of the box, B, which contains the weights. In the centre of this bridge stand two upright pieces, seven inches apart, and supporting the wheel C. This wheel is twenty inches in diameter, and has a series of sixty wrought-iron pegs, projecting about an inch from its front surface, and being also about an inch apart. These pins do not run quite round, but an interval of about three inches and a half is formed at D, through which a pinion works, when traversing from the inside to the outside of the pins, and *vice versa*, during the reversing of the motion, instead of confining the pinion to one course, as when working the ordinary cog-wheel. Over the periphery of this wheel passes a flat chain, EE, crossing underneath and attached to the ends of the mangle-box: F, is a winch handle used to communicate the motion, and G, a stout fly wheel, of about four feet in diameter, which assists and regulates the operation. The axle, upon the opposite extremities of which the wheel and handle are fixed, lies along a groove in the bridge above mentioned. Near the end of the axle, next the handle, is a pinion which works in a cog-wheel of six inches diameter, lying within a recess in the circular head of the near support; the last mentioned wheel turns on a short pivot, and has two holes in its face, into which is loosely inserted the forked end of an axle, I, having at its further termination a pinion which acts upon the pegs of the wheel. There is a slit at K, through which the end of this axis passes, and which gives it a vertical motion sufficient to allow the pinion to pass up and down from one side of the circle of pegs to the other. Thus, when the machinery is put in motion by turning the handle, the pinion of the axle, I, traverses the circle of pegs on the wheel, until coming to the gap at D, it turns round the last pin, sinks or rises in the slit, and thus reverses the motion of the wheel, and by means of the chain that of the box likewise: the handle and fly-wheel still turning in the same direction as before.

This clever invention has received subsequent additions and improvements. The most interesting and useful of the deviations from Mr. Baker's plan is that of Mr. Elisha Peechey, who received a silver medal from the Society of Arts on account of it in 1823. The model of this mangle may still be seen in the Society's repository in the Adelphi. An endless rack is substituted for the peg wheel, and the flat chain is altogether abandoned. The annexed cut is an accurate representation of a complete mangle of this sort, as manufactured by Christie and Co., of Sheffield. With the exception of the bed, the underboards of the box, and the rollers, it is made entirely of cast and wrought iron.

Fig. 2.

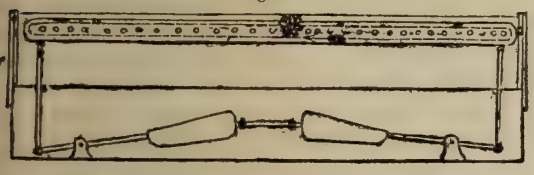


AAA, is a frame of cast iron, with cross pieces and bridges, BB, to support the handle; C, the cast-iron box, filled with large stones and gravel to give it weight; D, the rack, which is made to move up and down at each end in projecting grooves or slit pieces, as represented at E, and attached to vertical plates, FF, rising from the box. This rack is a stout metal bar, with a row of pegs along the middle of one side; and

parallel with the line of these pegs projects a deep margin, intended to confine a pinion to its hold upon the pins while traversing the rack, or rather while moving the rack backwards and forwards by acting successively on each side of the series of pins. G, is the handle, and H, the fly-wheel, fixed on the opposite end of the axle, adjoining the centre of the fly-wheel, which, acting upon a circle of cogs, gives revolution to the pinion which carries the rack, and the upper part of which is seen in the figure; KK, are two iron prongs, either of which, on being turned down, lift up and sustain the mangle-box when the rollers are to be taken out; LL, are the rollers upon which the linen is wrapped.

The manner in which the rack is balanced so as to produce a vertical and reciprocating motion through its whole length, cannot be gathered from the foregoing engraving; we therefore attempt to show by another cut how, in consequence of the rack being attached by each end to the connected levers, and counterpoised by the weights inside the mangle box, the pinion can traverse,

Fig. 3



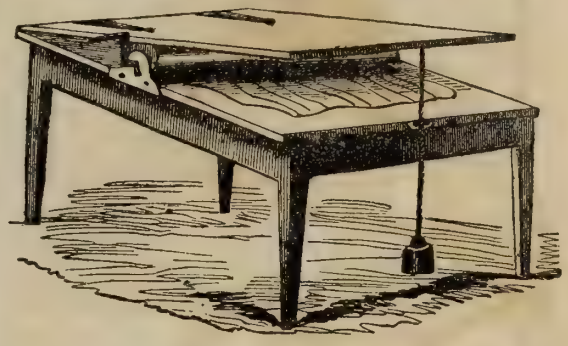
in the direction of the dots and arrows, the row of pegs along the middle. When the pinion, by the progression of the rack from right to left, passes round the endmost peg, the rack will be lifted up, the weights in the box will sink, and the course of the pinion will be along the under side of the rack, until on arriving at the last pin of the opposite end, the rack will again sink, the counterpoise rise to its present position, and the motion of the box be thus reversed with every alternation of the rack.

Mangling is performed in China in the most perfect manner, by a machine of the same kind as our mangle, but far simpler in its mode of operation. The figure at the head of this article will give an idea of the simplicity of the process. A concavity is formed in the floor of the apartment, and lined with hard polished wood. Upon this smooth surface is placed a roller, with the cloth intended to be mangled, rolled round it. A heavy stone of the shape above represented, and of sufficient width to rest on the floor at either side while the operator examines his work, is then slid upon the roller, and its elevations alternately depressed with his feet, so that the articles shall receive an equal pressure at every part. The man supports himself on the stone by holding a rod of bamboo, connected with supports of the same, driven into the floor at each side. The work executed by this means is said to be admirably finished, and not to take more than four or five minutes in the performance.

Another very simple machine has been successfully applied to the mangling of linen, and is recommended to the notice of such as cannot afford to purchase the more complete and complicated mangles. It may be made with facility, and at a small cost, by any common workman, and has the advantage of being applicable to domestic use as a table, when it is not required as a mangle. The illustration (fig. 4) and description will perhaps make the method of construction clear to our readers. A roller about four inches in diameter and thirty inches long, has a piece of thick woollen cloth, used for ironing, firmly fixed thereon.

The roller is turned round by means of a winch, and has its bearings at the ends in two stout iron plates, screwed to the sides of the table. Upon the roller rests a board of the length and width of the table, secured to it at one end by hinges, and which has at the other end a weight suspended to it, the pressure of which winds the woollen cloth and the damp linen articles laid upon it so tight upon the roller, that by continuing the motion the linen becomes as smooth as in the common mangle. The roller rests upon the table, and the iron plates allow it to rise and fall, according to the quantity of cloths wrapped round it. When it is required to use this mangle as a table, it is only to unship the roller and thus let fall the lid.

Fig. 4.



Patents were taken out in 1823, by Mr. Snowdon, and in 1828, by Mr. Wilkinson, for erect or vertical mangles, by which it was intended to obviate an objection sometimes made to the common horizontal mangles, on account of the space they occupy. The erect mangles have not however met with extensive adoption.

TO THE MOTHER OF AN INFANT ON ITS BAPTISM.

WHILE you and yours are gathered, calmly gay,
Around the babe new-born in Christ to day,
To all *your* prayers and wishes for her weal,
Let me add *mine*—for such I make and feel.

But trust not in the little Mary's smile;
Trust not her bloom; for there, perchance, the while,
Unseen the spoiler lurks, with secret sway,
And decks the treasure which he dooms his prey.
Though dear to thee, and him who hath thy heart,
Still e'en with her be ready, both, to part.

Yet the same verse that points parental fears
Would cherish hope, and spare a parent's tears.
'Tis true, all human feelings far above
Soars the quick fondness of a mother's love;
And Time, that tames the wildest grief, is slow
To quell the yearnings of a mother's woe,
When lies in earth's dark bosom, cold and lone,
The warm thing fed and fondled at her own—
And truth, thus warning from this breast of mine,
Alas! must find an echo deep in thine—
Still from this thought let consolation flow;
To all who live, oh! what is life below?
From youth to age, a thorny way we wend—
Ah! happiest those who earliest find its end;
And if thy child should find it early, weep
No joyless tears where last she's laid asleep;
Nor mourn, in yielding back to Him who gave,
A seed of life up-springing from the grave.—J. S. B.

BURIAL-PLACE OF THE CONVENT OF MOUNT SINAI.

IN the garden of the convent is the cemetery of the monks. Though not of a particularly melancholy humour, I am in a small way given to meditation among the tombs; and in many of the countries I have visited, the burial places of the dead have been the most interesting objects of examination. The superior had promised to show me the graves, and, now reminding the old man of his promise, he hurried off to get the key; for it appeared that the cemetery was not to be visited without his special permission. At the end of a long arbour of grape-vines, a narrow staircase cut in the rock, which I had not seen before, led down to an excavated square of about twenty feet; on the left of which was a small

door, opening into a vault, where formerly the bodies of the dead monks were laid on an iron bedstead, and there suffered to remain till all the corruptible part was gone, and only the dry bones remained. Now they are buried for about three years or as long as may be necessary to effect the same object; and when the flesh has disappeared, the bones are deposited in the great cemetery, the door of which is directly opposite. Within the door is a small antechamber containing a divan and a portrait of some saint, who wandered eighteen years in the desert without meat or drink. From this the door opens into the cemetery, which was so different from any I had ever seen, that I started back on the threshold with surprise. Along the wall was an excavation about thirty feet in length, but of what depth I could not tell. It was inclosed by a fence which was three or four feet above the ground, and filled with human skulls: and in front, extending along the whole width of the chamber, was a pile of bones about twenty feet high, and running back I could not tell how far. They were very regularly displayed in layers, the feet and shoulders being placed outward alternately, and by the side of the last skeleton was a vacant place for the next that should be ready.

I had seen thousands of Egyptian mummies, and the catacombs of Chioff, the holy city of Russia, where the bodies of the saints are laid in rows, in open coffins, clothed in their best apparel, and adorned with gold and jewels; and in that extraordinary burial-place I had seen, too, a range of small glasses in a dead stone wall, where wild and desperate fanatics had made their own tombs, with their own hands building themselves in an upright position against the walls, leaving a small hole open in front, by which to receive their bread and water; and when they died, the small opening was closed with a piece of glass, and the body of the saint was left thus buried. I had seen the catacombs of the Capuchin convent at Syracuse, where the bodies of the monks are dried and laid in open coffins, or fixed in niches in the walls, with their names labelled on their breasts; and in the vault of the convent at Palermo I had seen the bodies of nobles and ladies arranged upright along the walls, dressed as in life; the men with canes in their hands, and swords by their sides; and the noble ladies of Palermo lying in state, their withered bodies clothed in silks and satins, and adorned with gold and jewels; and I remember one among them, who, if then living, would have been but twenty, who two years before had shone in the bright constellation of Sicilian beauty, and, lovely as a light from heaven, had led the dance in the royal palace; I saw her in the same white dress which she had worn at the ball, complete even to the white slippers, the belt around her waist, and the jewelled mockery of a watch hanging at her side, as if she had not done with time for ever; her face was bare, the skin dry, black, and shrivelled, like burnt paper; the cheeks sunken; the rosy lips a piece of discoloured parchment; the teeth horribly projecting; the nose gone; a wreath of roses around her head; and a long tress of hair curling in each hollow eye. I had seen these things, and even these did not strike me so powerfully as the charnel-house at the convent of Mount Sinai. There was something peculiarly and terribly revolting in this promiscuous heaping together of mortal relics; bones upon bones; the old and young; wise men and fools; good men and bad; martyrs and murderers; masters and servants; bold, daring, and ambitious men—men who would have "plucked bright honour from the moon," lying pell-mell with cowards and knaves. The superior told me that there were more than 30,000 skeletons in the cemetery—literally an army of dead men's bones. Besides the pile of skulls and bones, in a chamber adjoining were the bones of the archbishops, in open boxes with their names and ages labelled on them, and those of two sons of a king of Persia, who came hither on pilgrimage and died in the convent: their iron shirts, the only dress they wore on their long journey from their father's court, are in the same box. Other skeletons were lying about, some in baskets, some on shelves, and others tied together and haging from the roof. In one corner were the bones of St. Stephen—not the martyr who was stoned to death at Jerusalem—but some pious anchoret of later and less authentic canonization. As to the effect upon the mind of such burial-places as this, or the catacombs to which I have referred, I can say from my own experience that they destroy altogether the feeling of solemnity with which we look upon the grave.—Stephens's *Incidents of Travel.*

THE BRANDY PEST.

No. VI.

The Chief Magistrate makes a Speech.

"The principal thing was now done," continued Fridolin, as he proceeded with the narration in which he was using the writings which he had brought with him. "In three weeks we succeeded in gaining to our Society twenty-nine fathers of families, besides seven unmarried young men. Doubtless the death of my father, and more especially the terrible end of old Mr. Thaly, had assisted in disposing their minds favourably to our undertaking. How could it be otherwise, when people had before their eyes the effects of brandy-drinking, in the ruin of a once respectable family, in the flight of the unhappy daughter, and in the impoverishment of a house formerly wealthy? But even suppose this not to have been the case, still almost every one had more or less experienced in himself that good as well as bad brandy is an unwholesome drink. Every one knew of the fights, the maimings, and the disgraces which happened in drunkenness almost every week. Every one knew the families in which affairs were going wrong, because the husband usually came home of an evening excited with wine, having drunk and gambled away his earnings at the inn.

"Now we determined on the first public meeting of the Society, which we eventually held in the great room of the Town-Hall.

"Besides those invited by ourselves, many, more than a hundred, attended from the vicinity. The greatest number came out of curiosity, and perhaps many for the sake of getting a laugh at us afterwards. The chief magistrate had in the meanwhile taken, at our request, his seat as President, and addressed a discourse to the assembly, which, by its simplicity and power turned the laugh against many of the laughers.

"He spoke as follows:

"'Dear fellow-citizens! It is well known through the whole town why we are assembled here, therefore I need not tell you why it is. But I think the greatest part of you are come, not to enroll yourselves as members of the Temperance Society, but rather to hear something new. Well, you shall hear something new, something which you did not know before.

"'Were I to run from house to house, and ask how many happy and contented families we have in the parish, I do not think I should count three dozen, adding all together. How is it with people's property and fortune? We must answer—these seldom advance, but generally stand still or decline. Nearly one half of the inhabitants are apparently impoverished. The remainder have some means, but are in debt. How is it with religion and morality? On Sunday morning one sings in the church, and on Sunday evening in the inn. Quarrels, fights, and law-suits flourish with us in abundance. The worthy justice of the peace here knows that best. There is no lack of failures, nor unfortunately of suicides; none either of illegitimate children. Some of our fellow-citizens have been sent to the house of correction. Are these the fruits of religion? Certainly not. These are the fruits of the devil, which he presents to his friends and subjects.

"'But where has the devil commonly and especially erected his throne among us?—Upon the top of the brandy-cask! Hark you!—you did not know this; so I will now talk to you about it. It is true the Scripture says, *Wine gladdens the heart of man*, but, mark well! only when drunk in moderation. But even the wine-drinker often becomes, if he does not take care, a drunkard; the more he drinks the more he thirsts. At last he cannot content himself with the juice of the grape, but takes to brandy-drinking. Many do this the sooner because they cannot afford the expense of wine! Unfortunate people! they know not what they do. They drink *poison*. All brandy is mixed with several kinds of poison. You did not know this! I have learned it from the doctors. Therefore I will make it known to all. Listen attentively.

"'Brandy consists of water mixed with much spirit of wine. This spirit is poisonous. It burns in blue flames when we light it. It operates on the blood and the gall, and occasions in those who drink it, the liver complaints, under which such persons generally suffer. Cherry-brandy contains the strongest poison hitherto known, the terrible prussic acid. A little drop of prussic acid placed on the tongue of a dog, kills it on the spot in convulsions. Certainly the prussic acid in the cherry-brandy is much

diluted; but whoever drinks much of the brandy, must also swallow much of the poison.

"'But the evil does not stop here. The brandy-distiller and liquor-maker mix with their wares many deleterious drugs to make them more palatable to their customers: as many innkeepers, for the same reason, make their wines stronger with sulphur, and add injurious substances to them to improve them. With brandy are principally mixed alum and solution of lead, laurel leaves, pepper, bitter almonds, and some exciting or stupefying drugs. Therefore, the destructive effects of spirituous liquors are not quite the same in all drinkers! One suffers from this, another from that evil. But the man is poisoned in all cases, even when he drinks moderately: how much more so when he is a regular dram-drinker! Such men in general do not become old. Among our people very few dram-drinkers are strong and healthy. Only ask about it in their houses. Only ask the doctors about it. There are many who drink, but do not become intoxicated. Habit enables them to do this. They boast of it. They think they can bear it. They are not held for especial drunkards, although they are such in reality. Their insides are eaten away, their liver and stomach are porous. They digest badly and very little. No wonder, for with some drinkers the stomach has been found not bigger than a fist; with others it has had holes eaten through. Whoever drinks brandy, and has its portion of poison once in his body, suffers much more under any disease that may befall him than he who does not drink it, if the disease does not carry him rapidly out of the world.

"'Dear fellow-citizens, you look astonished, but I speak on the authority of celebrated surgeons. You think I exaggerate. No, not in the least. Hitherto you have not reflected much on the bad effects of brandy; you must first have experienced them. This, however, you have not done. Our ancestors were unacquainted with this drink, and used it not. Even, at present, thousands live without it. These are healthy. And thousands live, who have sensibly enough freed themselves from the injuries which they were visibly suffering, and have entirely renounced brandy. They have become healthy, pious, and well-doing.

"'Brandy has become more common with us since the year of scarcity, because then wine and beer were too bad and too dear to be drunk. Since that time people have continued to drink spirits. But since that time also, poverty, and beggary, and licentiousness, have increased with us. A dram warms the stomach for a few minutes, excites the spirits for an hour, but leaves behind heavy limbs and headache; it weakens understanding, heart, and body. Brandy-drinking workmen are in general bad workmen. I know these idle fellows from experience. Away with them! Whilst they drink and gamble their wages away in the inns, their wives and families live at home like dogs. When they go home there is fighting and quarrelling. See in the streets the pale, half-naked, vicious children. Why are they pale, half-naked, and vicious? Through the misconduct of their parents. Little boys with us, can drink brandy; they imitate the, old ones, who drink on all occasions, even at burials. The vice of drunkenness does not stand alone. It has for companions, gambling, lust, and many secret sins.

"'Will you believe me if I tell you, that in our parish the poorest families, receiving parochial relief, daily drink their brandy? but this neither satisfies their hunger, nor quenches their thirst. Will you believe me that they become through it poorer and more unfit for work; that out of ten lunatics in the madhouse, out of ten thieves and other criminals in the prisons and houses of correction, out of ten diseased and ragged patients in the hospitals, certainly there are nine of them drinkers of brandy, and who through this drink have arrived at their present situation? Christians, who go to church, do you obey God, who forbids the crime of drunkenness? I believe that the poisonous devil of brandy is dear to many of you. You rather place the safety of your souls at hazard than leave this devil.

"'I see well that some of you think that it is not half so bad. A glass of brandy, even if a little of it gets into our head, does us no harm. It drowns grief and makes the heart joyful. O yes! I will yet tell you still more; a little drop in our head makes one hour merry, but often fills a day, or a whole year, with anxiety and repentance; it makes an hour rich, but then we squander our gold as if we had too much of it. What we buy in our intoxication appears doubled and more beautiful than it is, but when we get sober we see ourselves cheated and our purse empty. So wine and brandy are offered to the bidders at auctions, that they may see double, and think themselves rich. But how many men have got into poverty and debt through it!

"'However I will come to a conclusion. The misery and perverted state of life among us must be remedied. The governments and law-makers of countries hardly in any case trouble themselves about it. I know not whether they are wanting in will, or knowledge, or power. Therefore, we must and will help ourselves. A considerable number of respectable persons of our parish have united themselves into a Christian Society, like those of which many exist in other countries. These persons have resolved to refrain from drinking spirits themselves, and to influence their friends and acquaintances to do the same, as much as lies in their power, and to live as our ancestors did who now sleep in God. But only those friendly to a sober life can enter into this society, be they rich or poor. This Society is not political, not learned. It is an attempt of well-meaning families to restore religion, prosperity, and unity into our parish, and this through the means of partaking no more of distilled drinks, except in extraordinary cases. We hope that you and your families will gradually join us. And now that you have been shown what great mischief this sin brings, how heavy it is against yourselves, against your wives and children, and against your fellow-men, and what an offence it is against God, will you renounce it?—Hear the simple laws of our Society.'

"With a loud voice the Chief Magistrate read the laws we had agreed on, which were immediately signed by thirty-six men, who had previously engaged to sign.

"The laws were afterwards printed and distributed to every house, that all might become acquainted with them."

The Consequences of the Speech.

"Our chairman was a powerful speaker. Although only a farmer, he was well instructed; he did not speak according to the rules of art, but from heart to heart, candidly and strikingly. Yet his speech, which had caused in the assembly sometimes laughter, sometimes gravity, did not produce the effects I had anticipated. Only three fathers of families, who had not before joined our Society, came forward and signed our laws.

"But I was far more pleased, than by their accession, by a dirty ragged fellow, who approached slowly to the table of the chairman. He was known in the parish as a drunkard, and was often found lying intoxicated in a ditch or in the street. He desired to become a member of the Society, and begged the secretary to write his name in the book, as he could not write himself, and said, he would then make his cross at it. A general laugh rang through the whole assembly. When it had subsided, this man, who was known under the nickname of 'Fuddling Jack,' turned quietly towards the public and said: 'Yes, yes; laugh as much as you like. A time will come when I shall laugh at you also. I was once a brave fellow, as industrious as any, but the dram-drinking made me a beast. I know it very well; it has cost my wife a thousand tears, and my children go naked and hungry. I have lost all my courage and pleasure in working, and am neither well nor ill; I am nothing but a miserable fellow, a burden to myself and others. I have many sins upon my conscience—may God forgive me and help me!—and may He also forgive those that induced me to drink brandy!'

"At these words a great silence reigned in the assembly. Astonishment and doubts were read on all faces. I myself doubted the perseverance of this poor man in his good purpose. But he has indeed kept his word. He was admitted a member, and the assembly broke up.

"Several little circumstances prevented people in the beginning from enrolling themselves in our Society. With some, the use of brandy had become a habit; they imagined it was indispensable for their health, and that it could do them no harm, because they never drank to excess. Others ridiculed our Temperance Society; they said, it would not last long, the zeal would pass away with the novelty. Others would have become members, but they were offended at not having been invited at first. Others, especially some of the more respectable, withdrew themselves haughtily; they thought one could live moderately, without belonging to a Temperance Society; one ought not to make a show of virtue, and boast of it. They maintained also, that they could not, for good manners' sake, avoid offering to their visitors and friends a glass of cherry-brandy, cognac, or other spirits, before and after supper. Others used other pretexts to get rid of the onerous duty to mankind of contributing to the abolition of drunkenness through their own

self-restraint. Of course, neither inn-keepers, nor importers and dealers in spirits, signed our rules.

"In the mean time we, who were members, remained faithful to our cause; we abolished immediately all sorts of distilled drinks in our families, and offered them neither to friends nor strangers. We confessed freely that we belonged to a Temperance Society, and had promised not to take, nor to offer to others, any spirits. This often gave rise to conversation about the matter, and several of our friends were thus induced to inscribe their names in the Society's book, after having recorded their promise with the president or secretary. In a few months we counted upwards of two hundred members of our Society.

"Our perseverance often brought us into embarrassment, and led occasionally to disagreeable scenes. Some workmen and day-labourers refused to work without brandy, and several servants left their masters for the same cause. But we helped each other as well as we could.

"Very soon our village was divided into two classes—the class of the sober ones, and the class of the drunkards. Many chose to belong to the first class because they were ashamed to be worse than others. It had become a point of honour to be a member of our Society, and before a year was ended the moral state of our village was greatly changed—fighting, quarrels, and scenes of intoxication, seldom occurred; labourers who received no brandy worked better and more than the brandy-drinkers; many who had spent their money in drinking could now every week put some in the Savings' Bank.

"Most striking was the influence of 'Fuddling Jack.' After joining the Society he drank not a drop of spirits. In order to prevent his relapsing, we gave him work. He had soon visibly improved in strength, vigour, and health; he boasted very much of it, and daily related to everybody who would listen to him, how he had again become so happy—how, in the first week, the brandy-drinkers wished to seduce him, but he had kept his determination firmly like a brave man, and had made several proselytes. He and his family are now respectably clothed, and he has sufficient work every day. Sometimes on Sundays he walks, a true temperance apostle, into one of the neighbouring villages, and tells the people of the beauties and blessings of temperance, and I really think he has done more good to our neighbours by his zeal in this cause, than could have been effected in the same time by any other means. The peasants like to hear him—they look upon him as a living miracle. In two of our neighbouring villages there are now Temperance Societies, and in a third the commencement of another has been made.

"A village like ours seemed at first not very favourable to our Society, as it is a great thoroughfare, and so many strangers mingle with its inhabitants. But we saw that it was just the contrary, for its improved moral state struck the eyes of travellers; they found no drunkards, and if they offered brandy, it was refused. Old half-ruined houses were repaired; poor children became clean and well clothed, and young and old became healthier. The *cause* of this change did not remain long a secret. Strangers became interested in our cause, and very often took the printed regulations of our Society with them. The good seed therefore brought forth good fruit also in other parts of Switzerland."

DOGS.

There is a chapter in one of our metaphysical writers showing how dogs make syllogisms. The illustration is decisive. A dog loses sight of his master, and follows him by scent till the road branches into three; he smells at the first, and at the second, and then without smelling further, gallops along the third. That animals should be found to possess in perfection every faculty which is necessary for their well-being is nothing wonderful; the wonder would be if they did not: but they sometimes display a reach of intellect beyond this.

For instance,—dogs have a sense of time so as to count the days of the week. My grandfather had one who trudged two miles every Saturday to market, to cater for himself in the shambles. I know another more extraordinary and well authenticated example: a dog which had belonged to an Irishman, and was sold by him in England, would never touch a morsel of food upon a Friday; the Irishman had made him as good a Roman Catholic as he was himself. This dog never forsook the sick bed of his last master, and, when he was dead, refused to eat, and died also.—Southey's *Omniana.*

BURNING OF WICKLIFFE'S BODY BY ORDER OF THE COUNCIL OF CONSTANCE.

Hitherto, (A. D. 1428,) the corpse of John Wickliffe had quietly slept in his grave about forty-one years after his death, till his body was reduced to bones, and his bones almost to dust. For though the earth in the chancel of Lutterworth, in Leicestershire, where he was interred, hath not so quick a digestion with the earth of Aceldama, to consume flesh in twenty-four hours, yet such the appetite thereof, and all other English graves, to leave small reversions of a body after so many years. But now, such the spleen of the Council of Constance, as they not only cursed his memory as dying an obstinate heretic, but ordered his bones (with this charitable caution,—if it may be discerned from the bodies of other faithful people) to be taken out of the ground and thrown far off from any Christian burial. In obedience hereunto, Richard Fleming, Bishop of Lincoln, Diocesan of Lutterworth, sent his officers (vultures with a quick sight, scent, at a dead carcase) to ungrave him. Accordingly to Lutterworth they come, sumner, commissary, official, chancellor, proctors, doctors, and their servants (so that the remnant of the body would not hold out a bone amongst so many hands), take what was left out of the grave, and burn them to ashes, and cast them into Swift, a neighbouring brook, running hard by. Thus this brook has conveyed his ashes into Avon, Avon into Severn, Severn into the narrow seas, they into the main ocean; and thus the ashes of Wickliffe are an emblem of his doctrine, which now is dispersed all the world over.—Fuller's *Church History.*

This eloquent, though somewhat quaint passage, has been versified by Wordsworth, (*Ecclesiastical Sketches*, 2nd part, Sonnet X.)

> Once more the Church is seized with sudden fear,
> And at her call is Wickliffe disinhumed:
> Yea, his dry bones to ashes are consumed,
> And flung into the brook that travels near;
> Forthwith, that ancient voice which streams can hear,
> Thus speaks, (that voice which walks upon the wind,
> Though seldom heard by busy human kind,)
> "As thou these ashes, little brook! wilt bear
> Into the Avon, Avon to the tide
> Of Severn, Severn to the narrow seas,
> Into main ocean they, this deed accurst
> An emblem yields to friends and enemies
> How the bold teacher's doctrine, sanctified
> By truth, shall spread, throughout the world dispersed."

If it be not a branch of education, but the whole intent of education, to bring forth that in man which looks upward and to crush his downward tendencies; if no man ever believed that he had a humanity, however he might talk about it, who did not realize the conviction by looking out of himself and above himself; if every higher thought and aspiration has its ground in the belief of an actual established connection between himself and his Creator, it would seem the most extravagant inconsistency to disconnect human cultivation with acts of habitual and united worship. On the other hand, it would seem most accordant with the whole scheme, that all great and humanizing influences—the influences of music and architecture especially, which formed a separate head of culture among the Greeks, should be all connected with this, and made dependent upon it: that whatever acts most directly and powerfully upon the spirit within us should from our earliest youth witness to us what we are, and how we may attain the ends of our being, so that hereafter the world may not be a perplexed crowd of undistinguishable impressions, but that everything may be felt to proceed from one source and have one termination. Clearness of vision, to distinguish shadows from substances, simplicity of heart to embrace the true and hate the false, strength of will to bear up against infinite complications of passions within, and influences without, depend far more than we can conceive upon our being early imbued with the feelings of a unity in things, and with our being taught to refer them all to one centre.—Maurice *on Education.*

LONDON:
JOHN WILLIAM PARKER, WEST STRAND.
Published in Weekly Numbers, price One Penny, and in Monthly Parts, price Sixpence.
Sold by all Booksellers and Newsvenders in the Kingdom.

THE

Saturday Magazine.

No. 628. APRIL 16, 1842. Price One Penny.

HISTORICAL NOTICE OF RUGBY SCHOOL. II.

EAST VIEW OF THE SCHOOL-HOUSE.

In the year 1748 the trustees of the Charity found it necessary to apply to Parliament. In their petition they described the condition of the mansion-house given by Sheriff for the use of his schoolmaster, the school, and the other premises annexed to it, as being so ruinous as not to be worth an effectual repair. They further stated that the school-house was situated in a place too much confined, and without any ground or inclosure adjoining, for the recreation of the youth there educated, and that consequently many inconveniences resulted therefrom, both to the master and scholars. They also represented that a large and convenient new-built house was at that time upon sale, adjoining the said trust estate in Rugby, with a parcel of ground contiguous thereto, proper for a school and such place of exercise as aforesaid. On these accounts the trustees applied for an act to enable them to raise a certain sum of money by mortgage or otherwise of the Middlesex estate, declaring that unless some remedy could be speedily effected, the said free school, which had been for many years in great repute, and not only of service and benefit to the neighbourhood, but of public utility, must be lost and become useless, and the charitable intention of the donor defeated.

The house given by Sheriff to his schoolmaster was situated to the north of the church, and two of the original almshouses were built adjoining the east end of it. The school was a long lofty room, situated behind it, in a direction north and south. It was built probably soon after the year 1570. The trustees having obtained the consent of the Legislature, removed the site of the ancient school-house to the spot now occupied by Rugby School. The new site must be "naturally viewed with more interest," says Mr. Akermann, "when it is considered that it is a kind of natural plan of the Middlesex property, from which itself and all its appendages are derived. The present play-ground at Rugby is the exact size of the portion of the Conduit-close which came to the school by the bequest of the founder: it is eight acres within a few perches, as appears from the account of the allotments drawn up and left by the surveyor."

Although some of the masters were men of ability, the school languished under the embarrassment of a scanty revenue: but in the year 1777 the dawn of its splendour was first seen. At this time Sir John Eardley Wilmot, late Lord Chief Justice of the Court of Common Pleas, became a trustee of the school, and under his directions another Act was prepared and obtained. It constitutes the trustees of that time and their successors to be trustees for selling, letting, or otherwise managing the charity estates. It also enables them to dispose of a certain part of the property necessary to raise a sum not exceeding 10,000*l.*, to pay off the mortgage made on the removal of the school as aforesaid, together with all debts and incumbrances, and to apply the residue to the purposes of the charity.

It was further enacted that the school should be for ever called "The Free School of Lawrence Sheriff, of London, grocer;" and that the schoolmaster for the time being should be called "The schoolmaster of Lawrence Sheriff, grocer of London." And that the

trustees should always be styled "The Trustees of the Rugby Charity, founded by Lawrence Sheriff, grocer of London," and should use a common seal, round which should be inscribed the following words:—"The Trustees of the Rugby Charity, founded by Lawrence Sheriff." The act, after investing these trustees with certain powers, proceeds to provide for the conduct of the school. The head master to receive 50*l.* a year, in addition to the 63*l.* 6*s.* 8*d.* then paid. The assistant masters to receive not more than 80*l.* each, and the writing master not more than 40*l.* The boys of Rugby, Brownsover, or any place lying within *five* measured miles of Rugby, should be instructed without any fee or reward being paid for the same: but, in order to proportion in some degree the profits of the master to the number of boys under his care, the trustees are allowed to pay the master, in addition to his salary, a sum, not exceeding 3*l.* yearly for every such boy of Rugby, or within five miles, who should be instructed in grammar, and the Latin and Greek languages. The Act further directs the trustees to meet quarterly to hear the Rugby boys examined, and to meet annually to make such rules and orders for the better regulation of the school, and of the masters and ushers thereof, and of the alms-men, as they shall think proper. The Act also empowers the trustees to build additional alms-houses, not exceeding four, for old men of Rugby, or Brownsover, and to provide them with a gown of the value of 30*s.*, and a load of coals to each of them yearly, and to pay them a weekly allowance, not less than 3*s.* 6*d.*, nor more than 4*s.* 6*d.* The trustees to elect and send eight boys to the University of Oxford or Cambridge, paying 40*l.* a year to each during seven years, provided they actually reside eight months in the year at college. Such boys to be called, "The Exhibitioners of Lawrence Sheriff."

The rising importance of the school may be dated from the time when the leases of the Middlesex property expired. This took place in 1781. A large sum of money was raised by fines, which liberated the Trust from all its embarrassments,—new leases were granted for forty years, at very advanced rents,—the income became more than adequate to the expenditure,—and the surplus being annually invested in the public funds, gradually accumulated into a very considerable sum.

The Rev. Mr. Burrough, the master, who was now, (in 1778,) far advanced in years, preferring retirement to the exertions which the introduction of a new system of education must occasion, expressed his wish to resign; and an able successor was accordingly provided in Dr. James.

To this gentleman, who had been educated at Eton, and had been tutor at King's College in Cambridge, the organization of the school, under the new order of its concerns, is to be ascribed; and much praise is due to his ability and exertions. The fostering care of the trustees was also pre-eminent, and by the zealous co-operation of all its masters, the school rapidly increased, and became every year more and more an object of public attention,—its scholars were distinguished in the universities, its celebrity expanded,—and it assumed a conspicuous rank among the principal seminaries of the kingdom.

From the passing of the Act in 1777, all the orders and regulations of the trustees required the sanction of the Court of Chancery; and as they had now at their disposal a large sum of money, and as the depending leases were about to expire, there was every reason to expect that the revenue on the renewals would be greatly increased: the trustees therefore determined to apply to the Chancellor, and by an order made on the 14th of April, 1808, the trustees were empowered to dispose of part of the sum accumulated from the surplus income of the Charity, then amounting to 43,221*l.* 7*s.* 1*d.*, in the three-per-cent. Consols, and also of 1730*l.* 17*s.*, being the annual surplus income of the Charity, in the following manner:—To increase the stipend payable to the master, over and above his previous salary by 2*l.* per annum for each boy educated there upon the foundation, the freedom of the school having been extended, by an order in 1780, to the distance of *ten* miles within the county of Warwick. To raise a sum not exceeding 14,000*l.*, for rebuilding the schoolmaster's house, and erecting new out-offices and studies thereto, and for repairing such of the studies and buildings as were not intended to be then rebuilt. The order then empowers the trustees to increase the number of exhibitioners, as also the annual sum paid to each, and to arrange for the election of two boys every year to be sent to the University: also to increase the number of alms-men and the annual stipend and advantages to them respectively.

By a subsequent order of the Court of Chancery, on the 4th November, 1809, Mr. Henry Hakewill, an eminent architect, was appointed to succeed Mr. Samuel Wyatt, who died shortly after preparing his plans and estimates. It was then determined to rebuild, not only the schoolmaster's house and offices thereto, but also all the schools so as to form one uniform and connected range of building, according to Mr. Hakewill's plan, which improvement would require the sum of 32,000*l.* at the least. The trustees were therefore allowed to sell out stock arising from the surplus revenue, for the purpose of completing the buildings at Rugby. The plans of Mr. Hakewill were adopted, and in due time the present noble and extensive edifice was erected, containing every thing necessary for the convenience and comfort of those, for whose occupation it was designed.

The new structure is erected nearly on the site of the old one, at the southern extremity of the town. The edifice is composed of white brick, and the angles, cornices, and dressings to the windows and openings, are of Attleborough stone. The style of architecture is that which prevailed in the reign of Queen Elizabeth—"a grateful and elegant compliment," says Mr. Smith, "to the memory of the founder." "The rooms dedicated to different objects of tuition are judiciously separated: in domestic accommodation the scholars are divided with collegiate regularity; and the varieties of avenue, allowed by the wild but agreeable style of builders in the sixteenth century, is an advantage that could scarcely be obtained in a Grecian structure." The building is massy and interesting, from a graceful disposition of parts, rather than from plenitude of decoration. The principal front is that towards the south, which extends 220 feet. The schools are entered by a gateway, opposite the street, which leads to the principal court, a fine area, 90 feet long by 70 wide, with a plain cloister on the east, south, and west sides.

The buildings on the south of the court include the dining-hall belonging to the boys in the head master's house, and three schools for different classes; those on the west are occupied by the great school; and on the south are the French and writing schools. The east side adjoins the offices belonging to the head master's house, and by the cloisters on that side the scholars have access to the matron, &c., without interfering with the domestics of the master's establishment. The head master's house is placed at the east end of the range of buildings forming the south front, and adjoins the schools, though in some degree separated from them by the studies belonging to pupils accommodated in his house. There are small rooms in a compartment of the building, three stories high, and each student has one for his own use: about sixty boys are thus accommodated: the remainder lodge in the houses of the other masters, and in different boarding-houses in the town.

On the completion of these buildings, however, new powers were found wanting, which Parliament alone could impart. An act was therefore obtained in 1814, empowering the trustees to build a chapel for divine

service according to the rites of the Church of England, adjacent to the school buildings, for the use and accommodation of the boys; and to nominate a minister to officiate in the same. Powers were also given to the trustees still further to extend the alms-houses and the bounties to their inmates; as also to send an additional number of boys to the university, and to pay an additional yearly sum to each.

By the schedule to this act it appears that the Middlesex estate at that time contained 149 houses, situate in Chapel Street, Lamb's Conduit Street, New Ormond Street, Great Ormond Street, Great James Street, Ragdall Court, now Milman Place, Lamp Office Court, Little Ormond Yard, Lamb's Conduit Mews, and Feathers' Mews; together with the chapel of St. John, and its appurtenances, then under lease to the Rev. Richard Cecil, but at that time in the occupation of the Rev. Daniel Wilson; the net annual rent of the whole being 2378*l.* 1*s.* The rental of the Warwickshire estates was stated to be 91*l.* 17*s.* 6*d.* But independently of this revenue, large sums were from time to time received for the renewal of leases.

The discipline of this school is the same as that which has so long been approved at Eton. Each form has its peculiar master, who attends to no other; consequently the same attention is paid to the first form, or grammar boys, as to any other department of the school. This does not apply to the inspecting care of the head master, who, although he attaches himself to the sixth form, examines occasionally every class in the school. Another very useful peculiarity belongs to this seminary, which is, that it has both a French master and a master for writing and arithmetic, upon the foundation, to whose instruction every free boy is entitled without expense.

Any person who has resided for two years in the town of Rugby, or at any place in the county of Warwick within *ten* miles of that town, or even in the adjacent counties of Northampton and Leicester, within *five* miles of it, may send his sons to be educated at Rugby School, without paying anything for their instruction. But if the parent is not an inhabitant of Rugby itself, he must provide lodgings for his son at one of the boarding-houses connected with the school, and must pay for his board the same as is paid for a boy not on the foundation. The number of *foundationers*, as they are called, is not limited, but the number of those *not* on the foundation is not allowed to exceed 260. There is a head master, and nine assistants. The boys are divided into nine, or practically into ten classes, where they are distributed according to their proficiency in classical literature, in arithmetic and mathematics, and in French. The general school hours throughout the week are as follows:—

Monday. First lesson, seven to eight: second lesson, quarter past nine to eleven: third and fourth lessons, quarter past two to five.

Tuesday. First and second lessons, as on Monday: eleven to one, composition: half-holiday.

Wednesday. As on Monday.

Thursday. As on Tuesday.

Friday. As on Monday.

Saturday. As on Tuesday and Thursday, except that there is no composition from eleven to one.

There are various other lessons at additional hours for different classes.

Each half year is divided into two equal periods, called language-time and history-time. During the first, the poets and orators are principally read; during the second, geography and history are chiefly studied.

The annual examination before the trustees takes place at their meeting on the *third* Tuesday in July, upon which occasion some eminent person is invited from each of the universities, to examine the sixth form, previous to the disposal of the exhibitions. In 1807 the trustees agreed to give a sum of money annually, to be distributed in books as prizes, for composition; and also ten guineas for the best Latin, and six guineas for the best English poem.

The trustees of this school have always been men of the highest respectability, selected from the principal families in the county and neighbourhood. The annual meeting has ever been a time of great importance in the school. It was at one time a custom on these occasions to strew the school floor with rushes, a practice formerly observed in royal apartments. These rushes were afterwards changed for oak boughs, with which the school was decorated until about the year 1777, when, according to Mr. Carlisle, the custom was discontinued.

The Lord Chancellor is considered as the visitor of this school.

The business of the school begins and concludes with prayers, when all the masters attend.

The vacations are seven weeks at Christmas, and seven weeks at Midsummer.

SONG FOR THE SPRING.

Come forth, come forth! it were a sin
To stay at home to day!
Stay no more loitering within,
Come to the woods away!

The long green grass is filled with flowers,
The clover's deep dim red
Is brightened with the morning showers
That on the winds have fled.

Scattered about the deep blue sky,
In white and flying clouds,
Some bright, brief rains are all that lie
Within those snowy shrouds.

Now, look!—our weather-glass is spread—
The pimpernel, whose flower
Closes its leaves of spotted red,
Against a rainy hour.

The first pale green is on the trees;
That verdure more like bloom;
Yon elm-bough hath a horde of bees,
Lured by the faint perfume.

The cherry orchard flings on high
Its branches, whence are strown
Blossoms like snow, but with an eye
Dark, maiden, as thine own!

As yet our flowers are chiefly those
Which fill the sun-touched bough;
Within the sleeping soil repose
Those of the radiant brow.

But we have daisies, which, like love
Or hope, spring everywhere;
And primroses, which droop above
Some self-consuming care.

So sad, so spiritual, so pale,
Born all too near the snow,
They pine for that sweet, southern gale,
Which they will never know.

It is too soon for deeper shade;
But let us skirt the wood,
The blackbird there, whose nest is made,
Sits singing to her brood.

These pleasant hours will soon be flown;
Love! make no more delay;
I am too glad to be alone,
Come forth with me to day.—Anon.

As anciently God fed his servant Elias, sometimes by an angel, sometimes by a woman, sometimes by ravens, so doth he make all persons, whether good, bad, or indifferent, supply his people with that instruction which is the aliment of virtue, and of souls; and makes them and their examples contribute to the verification of that passage of Saint Paul, when he says that *all things co-operate to good to them that love God.*—Robert Boyle.

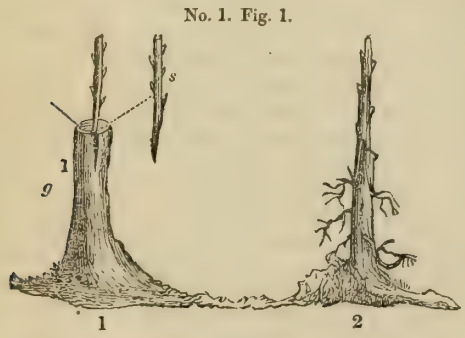
ON GRAFTING. II.

Notwithstanding the many advantages to be derived from grafting, alluded to in our late notice of this art, it must be recollected that no change whatever can be produced in the scion, except that occasional increase of luxuriance which arises from its having a more plentiful supply of nourishment from the juices of the stock into which it is inserted, than from the parent tree. In perennial trees, a new alburnum, and a new system of vessels are annually produced, and the nutriment for the next year deposited in them, so that the new buds are supplied with a reservoir of matter essential to their first developement. Yet, though the leaves, blossoms, and fruit of the graft are of the same kind as if it had vegetated upon the parent stock, it is rendered for a time more vigorous, and produces fairer blossoms and richer fruit. This flourishing state of the graft however does not prevent it from participating in those qualities for which the parent tree was remarkable. Diseases and disposition to early decay, if they existed in the parent, will be sure to manifest themselves in the posterity. Thus it is that we sometimes see an ingrafted tree looking vigorous and beautiful for two or three years, and then gradually deteriorating and falling into decay.

From what we have said it will be evident that too much stress cannot be laid on the injunction to choose the young scions from among healthy branches, growing on equally healthy trees, in order that a sound and not a sickly progeny may be multiplied.

Crown-grafting, or "grafting in the rind," is a ready method of grafting on large limbs, with thick bark, or on large stems. It is generally practised from the end of March to the third week in April, because at that time the bark separates the more easily from the wood. The process is as follows:—Saw off the head of an old espalier or standard tree horizontally at a place where the bark appears to be as firm, even, and smooth as possible; and should such a place be found at only about six inches above the level of the ground, it will, if the object be to obtain a new espalier, be all the better. Pare the surface of the wood and the edges of the bark smooth; then select the scions, either from those reserved for the purpose, or take them at once from the trees. With a sharp budding-knife cut one side only of each scion flat and a little sloping, and let the cut be an

No. 1. Fig. 1.



inch and a half or two inches long: then make a sort of shoulder at the top of the cut, that the graft may rest upon the wood of the stock. In the next place raise the back by thrusting in a tapering flattened piece of smooth hard wood or ivory, between the wood and the bark; when this is withdrawn insert the end of the scion with its cut side next the wood, till the shoulder reach it, and rest upon the stock. It has been remarked, that if the scion *draw* in going down, and make a kind of whistling sound, like that of an exhausting syringe, it is likely to be a successful graft.

In this way three or four scions may with propriety be inserted into the same branch or stem, as indicated by the lines \/ (No. 1, fig. 1). The grafting being completed, a smooth soft cord should be passed several times round the top of the stock, tight enough to secure the scions, but without injuring the bark. The whole is then clayed over in the form of a dome, that the rain may be effectually thrown off.

Objections have been made to this mode of grafting for the following reasons:—the section of the scion is plane, the part of the stock to which it is applied is circular; consequently the surfaces can only come in partial contact. Again, the abrasion must be considerably larger than the space covered by the scion, particularly if the back of the stock be ridged. The cavity on each side of the scion will therefore be filled either with air, which is injurious, or, if the tree be vigorous, with sap, which frequently "drowns" the graft. It is also a disadvantage attending this mode of grafting, that in exposed situations the ingrafted shoots are liable to be blown out of their position by violent winds; the only remedy for which is tying long rods to the body of the stock or branch, and tying up each scion and its shoots to one of the rods.

Apples and pears are the fruits usually propagated by cleft and crown-grafting. Mr. Towers states in his *Gardener's Manual* that repeated experiments have satisfied him that crown-grafting is applicable to the youngest stocks. For apples he considers Siberian crabs, two or three years old, to be very proper: for pears, young plants of the quince, raised from seed, by suckers, or layers; the stocks need not be more than a quarter of an inch over; and the scions only a little less. A graft carefully inserted within the rind, will, in a year or two, form a perfect junction with the stock, and cover it so completely, as almost to obliterate any mark of the wounds, leaving the stem entire, and nearly without a cicatrix.

Saddle-grafting is so termed because the scion is shaped to be seated across the stock, which is cut into a wedge-like form to receive it. When the operation is skilfully performed it produces a neat and handsome graft. With respect to this method we may quote the valuable obversations of Mr. Knight.

As this method has rarely or never been properly executed, it will be necessary to describe the motion of the sap, as I conceive it to be, at the period when grafts are most advantageously inserted. The graft first begins its efforts to unite itself with the stock, just at the period when the formation of a new internal layer of bark commences in the spring; and the fluid which generates this layer of bark, and which also feeds the inserted graft, radiates in every direction from the vicinity of the *medulla*, to the external surface of the alburnum. The graft is of course most advantageously placed when it presents the largest surface to receive such fluid, and when the fluid itself is made to deviate least from its natural course. This takes place most efficiently, when a graft of nearly equal size with the stock is divided at its base (*g*), and made to stand astride the stock (*s*); and when the two divisions of the graft are pared extremely thin, at and near the lower extremities, so that they may be brought into close contact with the stock, (from which but a little bark or wood should be pared off,) by the ligature. I have adopted this mode chiefly in grafting cherry-trees, and I have rarely ever seen a graft fail, even where the wood has been so succulent and immature as to preclude every hope of success by any other method.

Fig. 2.

A ligature of soft bass matting should be passed round the whole intermediate space between *s* and *g*, fig. 2, excepting the bud *b*.

By referring to No. 2, fig. 1, the reader will find a representation of a curious method of grafting, called *root-grafting*. This is performed on parts of the roots of removed trees, when the proper stocks are scarce. In removing young trees intended for stocks, if the perpendicular roots have grown to an inconvenient

length, about six inches may be cut off from the extremity, and the scions of apple, pear, plum, or peach trees, may be accurately fitted and bound to this piece of root, as in splice or whip-grafting; and then the roots with their attached branches be deposited in the ground as cuttings, so deep that the whole of the root, and the greater portion of the scion be covered with mould. This method has been found to succeed very well; but the root grafts are said to grow with still greater vigour, if that part of the tap-root which is intended to receive the graft, be left undisturbed in the soil and grafted on the spot.

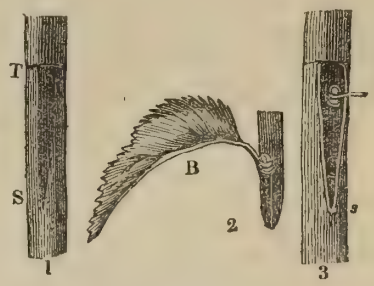
Inarching, or grafting by approach, is a process by which the branches of contiguous trees are caused to approach and unite together, this union being effected on the same principles as that of whip-grafting. Corresponding slices are taken off, a small slit being made upwards in the one, and downwards in the other: the wounded parts are then joined and covered with moss or grafting-clay. Inarching succeeds well with plants that cannot be otherwise excited to protrude roots. Professor Thouin has enumerated thirty-seven varieties of inarching, all of them however being reducible to two, namely, *crown-inarching*, wherein the head of the stock is cut off at the time of operating, and *side-inarching*, wherein the head is retained for a time. The latter is thought to be more suitable to delicate and tender trees or shrubs, and also when blank spaces among the branches are to be filled up. The operation is usually performed in the spring; and by it orange trees, camellias, and other ornamental shrubs, are propagated. It is also successfully applied to herbaceous vegetables with solid stalks. Sometimes the union between the layer and the stock is effected in four or five months, but in other cases it is protracted for four or five years. Whenever it is found to be complete, the clay and ligature may be removed, and the layer be separated from the parent stock, by a sloping cut made downward, with a very sharp knife, close to the stock; and at the same time the head of the stock should be cut off, unless it has been done at the period of inarching. Mr. Knight has recorded his method of grafting a branch or shoot on its own tree, as follows:—

In the last season (1812) a peach tree in my garden, of which I was very anxious to see the fruit, had lost, by the severity of the weather, all its blossoms except two, which grew upon leafless branches. I was very desirous to preserve these, as well as to acertain the cause why the peach and nectarine, under such circumstances, failed to attain maturity. The most probable cause, according to my hypothesis, appeared to be the want of returning sap, which the leaves (if existing) would have afforded, and the consequent morbid state of the branch. I therefore endeavoured to obtain the necessary portion of returning sap from another source. To obtain this object, the points of the branches which bore blossoms were brought in contact with other branches of the same age that bore leaves; and a part of their bark, extending in length about four times their diameters, was pared off immediately above the fruit. Similar wounds were then made upon the other branches, with which these were brought into contact; and the wounded surfaces were closely fitted and tightly bound together. A union took place, and the fruit, apparently in consequence of it, acquired the highest state of maturity and perfection.

Budding is another variety of grafting, which consists in transferring a germ or bud from a young shoot, with a portion of the surrounding bark to the branch of another tree, and there placing it in close contact with the alburnum of that tree. The season for this operation is usually from the latter end of July to the latter end of August. It is performed during the evening hours, or on a cool and cloudy day, that the influence of the sun may not prevent adhesion of the parts. Fine plump buds are chosen from the middle of a shoot of the same year's growth, and much of the success depends upon the preservation of what is called the root of the bud. The materials required are a sharp budding-knife, with a polished handle, several strong, flat, and soft strings of bass-matting, a basin of water, and a handful of moistened moss.

There are many varieties of budding; but our figure refers to that which is called T budding, from the incision being made in the form of a ⊥ reversed. The direction for this process may be given as follows. Select the smooth side of a stock, and with a budding-knife make a horizontal cut across the rind, quite through to the firm wood; from the middle of this cut make a slit downwards (T, No 1, fig 3) perpendicularly, an inch or

Fig. 3.



more long, going quite through to the wood. Then as quickly as possible take off a bud, by entering the knife about half an inch below it, cutting nearly half-way into the wood of the shoot, and continuing it with a slanting cut upwards to about half an inch above the bud. This cut must be deep enough to take some of the wood along with it; but as soon as the bud is cut out, the woody part must be gently detached from it: it will then be seen whether the eye or gem of the bud remain perfect; if it does not, and a little hole appears in that part, the bud is useless and another must be prepared. This being done, with the flat haft of the knife separate the bark of the stock on each side of the perpendicular cut clear to the wood (see the dark space, No. 1) for the admission of the bud, which directly slip down close between the wood and bark to the bottom of the slit *s*. Next cut off the top of the shield *b*, even with the horizontal cut, so that the upper edge of the shield may join exactly with it, and so the descending sap may immediately enter the bark of the shield. (See the bud inserted and fitted into the stock at No. 3, fig. 3.) The part of the stock between *s s*, is now to be bound round with bass-matting in every part, except just over the eye of the bud. In No. 2, fig 3, the bud is represented with a leaf remaining entire, but it has been found that the removal of the leaf and a portion of its stalk is of advantage to the bud.

Budding may be performed on shoots of the same year's growth, as well as on stems of several years growth; and in such, by inserting a number of buds, a complete tree may be formed at once. The bud will be firmly united to the stock at the end of three weeks, when the bandage may be loosened, and in a week or two afterwards finally removed.

The clay used in grafting is prepared with three parts of blue or yellow clay or brick earth; one part of fresh horse-dung, free from litter, and a small portion of soft cut hay or hemp. These are to be mixed well together with a small quantity of water, and beaten till the mass is of firm texture, and yet sufficiently yielding to be moulded into any form. A little common salt tends to preserve the moisture, but this must be judiciously employed, as too large a quantity would be injurious to the stock.

Grafting-wax is used as a substitute for clay. This is often made with pitch, rosin, bees-wax, and turpentine, but it is liable to objections. It does not adhere perfectly unless the stock and scion be quite dry at the time it is put on; nor does it yield that supply of moisture to the

graft which in very drying weather is required by it, and afforded by means of the clay. It has been recommended to employ the usual claying in the first place, and when the exterior portion of the mass is hardened, to wash it over with coal tar, repeating the operation when the first coating shall have become dry

GUNPOWDER.

Next to the invention of printing, there is no other that so much arrests our attention as that of gunpowder, which, by introducing artillery, and a new method of fortifying, attacking, and defending cities, wrought a complete change in the whole art and tactics of war. This invention comprises several discoveries which it is necessary to distinguish from each other. 1. The discovery of nitre, the principal ingredient in gunpowder, and the cause of its detonation. 2. The mixture of nitre with sulphur and charcoal, which, properly speaking, forms the invention of gunpowder. 3. The application of powder to fireworks. 4. Its employment as an agent or propelling power for throwing stones, bullets, or other heavy and combustible bodies. 5. Its employment in springing mines and destroying fortifications.

All these discoveries belong to different epochs. The knowledge of saltpetre or nitre, and its explosive properties, called detonation, is very ancient. Most probably it was brought to us from the East (India or China), where saltpetre is found in a natural state of preparation. It is not less probable that the nations of the East were acquainted with the composition of gunpowder before the Europeans, and that it was the Arabs who first introduced the use of it into Europe. The celebrated Roger Bacon, an English monk or friar of the thirteenth century, was acquainted with the composition of gunpowder, and its employment in fireworks and public festivities; and according to all appearances, he obtained this information from the Arabic authors, who excelled in their skill of the chemical sciences. The employment of gunpowder in Europe as an agent for throwing balls and stones, is ascertained to have been about the commencement of the fourteenth century; and it was the Arabs who first availed themselves of its advantages in their wars against the Spaniards. From Spain, the use of gunpowder and artillery passed to France, and thence it gradually extended over the other states of Europe. As to the application of gunpowder to mines and the destruction of fortified works, it does not appear to have been in practice before the end of the fifteenth century. The introduction of bombs and mortars seems to have been of an earlier date (1467). The invention of these in Europe is attributed to Sigismund Pandolph Malatesta, Prince of Rimini; but in France they were not in use till about the reign of Louis the Thirteenth. Muskets and matchlocks began to be introduced early in the fifteenth century. Muskets and pistols with spring-locks were first manufactured at Nuremberg.

Several circumstances tended to check the progress of fire-arms and the improvement of artillery. Custom made most people prefer their ancient engines of war; the construction of cannon was but imperfect; the manufacture of gunpowder bad; and there was a very general aversion to the newly-invented arms, as contrary to humanity, and calculated to extinguish military bravery. Above all, the knights, whose science was rendered completely useless by the introduction of fire-arms, set themselves with all their might to oppose this invention.

From what we have just said, it is obvious that the common tradition which ascribes the invention of gunpowder to a certain monk named Berthold Schwartz, merits no credit whatever. This tradition is founded on mere hearsay; and no writers agree as to the name, the country, or the circumstances of this pretended inventor, nor as to the time and place when he made this extraordinary discovery.

Lastly, the mariner's compass, so essential to the art of navigation, was likewise the production of the barbarous ages to which we now refer. The ancients were aware of the property of the magnet to attract iron; but its direction towards the pole, and the manner of communicating its magnetic virtues to iron and steel, were unknown even to all those nations of antiquity who were renowned for their navigation and commerce. This discovery is usually attributed to a citizen of Amalfi, named Flavio Gioia, who is said to have lived about the beginning of the fourteenth century. This tradition, ancient though it be, cannot be admitted; because we have incontestible evidence that before this period, the polarity of the loadstone and the magnetic needle were known in Europe; and that, from the commencement of the thirteenth century, the Provençal mariners made use of the compass in navigation.

It must be confessed, however, that we can neither point out the original author of this valuable discovery, nor the true time when it was made. All that can be well ascertained is, that the mariner's compass was rectified by degrees, and that the English had no small share in these corrections."—Koch's *Revolutions of Europe.*

UNTRUTH.

In plain truth, lying is a cursed vice. We are beings who have no other tie upon one another but our word. If we considered the horrid consequences of a lie, we should prosecute it with vengeance, as the worst of crimes. Children are often absurdly corrected for trifling faults, and are made to smart for rash actions that are of no significance or consequence; but the faculty of lying, and what is something of a lower form, stubbornness, seem to be faults that ought, in every instance, to be severely checked both in their infancy and progress, they being vices which are apt to grow with the growth; and after the tongue has contracted a habit of lying, it is scarce to be imagined how impossible, almost, it is to draw it out of the false track; from whence it comes to pass, that we see some who are otherwise very honest men, not only subject, but mere slaves to this vice. If falsehood had like truth only one face, we should be upon better terms; for we should then take the contrary of what the liar should say for certain truth; but the reverse of truth has a hundred thousand forms, and is a field without limits. The Pythagoreans make good to be certain and finite, and evil infinite and uncertain; there are a thousand ways to miss the white, and only one to hit it. For my own part I am not sure that I could prevail with my conscience to secure myself from manifest and extreme danger by an impudent and solemn lie. One of the ancient fathers said, "That we had better be in company with a dog that we know, than with a man whose language we do not understand." So that two persons who have no common language are scarce men with regard to each other. And how much less sociable is false speaking than silence!—Montaigne.

There is a mere animal enjoyment of natural beauties, common even to those who are lovers of pleasure more than lovers of God. They can smell the fragrance of each herb and flower, inhale the balmy breeze of heaven, and cull the choicest of nature's fruits, and cool for a moment a feverish thirst at her streams of living water: and all this may be done as a mere gratification of the senses, as part of that round of animal enjoyments which forms the whole of their existence.

But in minds of another cast there is a habit of association formed, by which every pleasure that natural objects afford assumes the character of devotion. To them, to leave the calls and business of the world, and withdraw to the calm retreat and silent shade, is to pass at once into an element of communion with Heaven. It is not that from a conscientious principle they seize the moment of disengagement to meditate on eternity, and pray to their Father who is in secret. No: it is because they see, as it were, an impress of God upon the scene; and all that they behold speaks of Him. It is with them none other than the house of God and the gate of heaven. Nature bears them upward by an unperceived and gentle motion, into the felt presence of nature's God. That this is not, as some would say, mere sentimentality, *I know;* for I have seen the feeling put to a test, at that solemn moment when false notions vanish like the chaff that the wind scattereth over the earth. It was my lot, many years ago, to attend a friend unspeakably dear to me upon his dying bed. He was one who loved all that is pure in nature, and who, moreover, loved the Lord his God with all his heart. But a few hours before his departure a bunch of his favourite flowers was brought to him.—The sorrowing group around him watched with tender anxiety, to see whether he would notice, and in what manner he would now be affected by them; but they were not left long in suspense: for no sooner did he catch the well-known fragrance, than he lifted his eyes to heaven, and almost with his last breath exclaimed, "Silent hymns! — Rev. Henry Woodward.

SKETCHES OF IRISH MANNERS AND CUSTOMS.

VI.

I HAVE seen something of that vindictive spirit which has so fearfully displayed itself in various parts of this island. A vessel was wrecked: the owner was disliked. I cannot tell why: nothing material, or it would have been well known in the endless cosherings from cabin to field, all day and every day. The people would not help till fairly shamed by good-natured expostulation and active example; then a few came forward, but it was said very openly that, had they not liked one of the crew, they would have seen the vessel go to pieces without stirring. This bad feeling was felt the more from their ordinary readiness to assist in any emergency, however indolent at steady work. Another wreck was of more importance in size—in cargo—in peril, and has in fact been the event of the winter in these regions.

Wrecks are strange things sometimes to land eyes. I saw one in the south of England, utterly lost and abandoned—but so upright—with all her masts, yards, &c., standing—that I should scarcely have believed she was the wreck I came to see, had she not been nearer the cliff than so large a vessel would have ventured; and that the sea was lashed into red foam all around, from the violence of the striking and ploughing-up the red mud: and this Irish wreck looked so comfortably settled that it was strange to be told of a great hole in her side, and of a boat being launched into her hold as into a pond, as the only mode of getting at the cargo, and that the boat was fairly knocked to pieces in so working. There has been some speculation upon the possible effect of a quantity of iron in the cargo, in deranging the compasses and so misleading them in their course. The pilot, as they were leaving their port, said that if he was to steer by the compasses he should be quite wrong; but when they got out to sea, and the pilot had left them, no notice was taken of this, and in a few hours after they were on the rocks very wide of their proper course. One of the crew mentioned having been in a vessel in the Baltic laden with iron; that exactly the same remark was made of the impossibility of steering by the compasses; that no attempt was made to ascertain the deviation, and that the vessel was wrecked. This great ship had struck on the rocks, so near the shore that it looked as if a good jumper could have sprung upon her deck; yet that little distance was impassable for many hours, during which the lives of all on board were in frightful jeopardy—a tremendous gale raging, and the ship striking with such violence that every shock was expected to shiver her to pieces; but being perfectly new and built with remarkable strength she stood it, and at low water the people were able to land.

Some cabins are perched on the rocks, and a woman described to us her terror at being waked from her sleep by the cries of the shipwrecked crew: how she ran to her door—"Just in me shift as I was—an sure then I seen the ship right over me like a wudd, (wood,) an I heared the cries, and then I just clapped my hands together, and let the shouts out o' me." A few days after the disaster, when the gale had blown itself out, I had seated myself under a sunny wall in an excellent place for seeing the wreck, which I was trying to sketch, and was very intent upon my work, when two sailors or fishermen passed, paused, and watched me for a minute, and one said to the other, "She'll be making a copy of it." I looked up—amused I fancy—for the man repeated, "You'll be copying the wreck," and tried to peep, topsy-turvy fashion, over my book. "Yes," said I, "would you like to look at it?" and handed it to him. His shout was delicious to my ears, though certainly rather startling. "Begorra an' ye've taken the patthern exactly:" then turning to his companion, with the drollest air of patronizing me, he went on, "How well she's done it—she's extrornary clever—I never seen such an exact copy. Yes, them's the mast's, and there's the sea and the rocks" (looking up and verifying each item of the scene.) "Faith its just the patthern she's got, dy'e mind," again to his companion, who evidently had not his quick eye: he then gave me back my book, without a word of thanks—watched me set off again—repeated, as if to himself, "Its extrornary clever," with a funny drawl and emphasis, and then trudged on, leaving me highly diverted, and not a little pleased with his testimony to the faithfulness of my little sketch, and astonished at his recognizing all the points of a mere outline, which I find many educated people cannot do. But I think this man had drawing in him; his eye was remarkably lively and intelligent, and lit up his heavy features into agreeableness, though to be sure I was so flattered that my judgment may be supposed to have been somewhat hoodwinked.

After some weeks' resistance of the rocks and winds and waves, the good ship was conquered, and fairly broke asunder. The news spread like wild-fire of course, and the beach was crowded with people, seizing such fragments of timber as they could manage to secure. The point of rock on which the cottages are built was the centre of attraction, for nearest to that the head of the unfortunate vessel had been driven, and lay partly supported by the sunk rocks in such a manner that the female figure-head was nearly on its face in the water, which called forth the loudest lamentations from the women assembled on the shore—"Och hone!" they cried, "och the craythur! och the craythur! and she just looking for all the world as if she were alive—och the beautiful craythur—isn't it a pity of her to be brought so low this day: bad luck to the man that brought her there: he ought to be—yes, he ought—he ought to be just thranshported." To those who have seen the hideous creatures that are stuck up for figure-heads this tender sympathy, and the punishment desired, will appear, as it did to me, not a little comical. At another part of the shore two men encountered each other, and after the "coorse day" had been given, one said, "Well I was'nt this length before since she was in it: what's to be seen at all, Donald? Och then just go beyond yon rock, ye'll see the great mast, and there's the lady on the bow, and that's all the seeing there's in it, barring the timber."

The people here are very indifferent to rain, but I think they feel cold, and complain more of it, than our labouring class. The variations of temperature are more rapid and more trying on this coast than in England. The range may not be so great: one has no hope of being comfortably burnt under a fine bright sun one day, which consoles one for requiring a shawl the day after. A shawl is always as indispensable here as one's shoes; but the shawl of the morning may require to be reinforced with boa and cloak by mid-day, and at midsummer, and they may be too much before the evening: the temperature is never the same for an hour. A mist sweeps down the glens; nestles in the crevices of the mountains, and produces the most unpleasant chill I ever felt: it clears off, and one can get out with pleasure, but a fire is absolutely necessary the whole summer. The damp chill of a room without is quite miserable. I now believe the smoke of the cabins to be necessary for the health of the people: the cottages are often placed in swampy hollows, and in the most favourable situations, and with the greatest care, nothing in this climate can be kept really dry. In England we think only of the dirtiness of the smoke, but for drying up the damp, and as a disinfector, the peat smoke must be not merely submitted to, but considered as a blessing. Elinor O'Donaghey's lamentations over the coldness of her slated house would be made with perfect truth, and there is little kindness in attempting to alter those habits which have grown out of the irremediable evils of the climate. They

cower over their turfs on stools or low settles—so close that I could often cover four or five heads with a small handkerchief: I suspect they injure themselves by the habit, but it has a most agreeable air of cosy sociability: there is a great deal more association amongst the people than we are used to. Everybody knows everybody for miles round, and everyone's affairs are public property: if they like the person every one seems to take a marvellous interest in furthering their wishes.

In the summer I was once in sad distress for chickens and for eggs: all the towns round were ransacked in vain, but at last Pat Blaney, in mere good nature, sent his daughter far up the glens to search, and to desire my necessities might be made known at the chapel door, in consequence of which plenty of fowls were brought down, and eggs in twos and threes came in at a great pace, till I was obliged to cry "hold enough." The master's horse search excited prodigious interest far and near; and when he had suited himself, innumerable were the "wish ye lucks" he received. One man accosted him on the road with "Its a horse ye've bought I heer—By gavers but he's a good one—Plaze to walk him out a bit till I see him. Well but he's a bulley of a baste—wish ye luck of him. I'd not have had ye buy a bad one—meself was looking out for ye. Well now he *is* a good, an' its in luck ye are to have got him, &c. —all with the air of personal interest and care-taking which is so very droll often here, and from persons almost, and often, quite strangers. About horses they seem to know and to care far more than our people: there are several dwellers in cabins near us who are reputed admirable judges, and seldom are without a clever pony or something of that kind for their own use, which they "will part"—*Anglice*, sell—if they can get their price: odd half broken creatures they are—as unlike the staid, sedate, farmer's horse in England as can well be; but they please the natives, and one does not hear of accidents to man or horse with their random ways: they are all used to it, and a squadron of cars sailing along, nine knots an hour, is enough to frighten any sober horse, and divert any stoical man. A gentleman of our acquaintance had a horse whose manners were sufficiently exceptionable—going back instead of forwards, and manifesting a very inconvenient quantity of self-will: we were speaking of him to a countryman, who replied, "Aye, that horse of Mr. ——— has a dour drap in him—an' a wee roost an' shkair besides,"—*Anglice*, ill-tempered, restive, and starting.

From the middle of the summer to Christmas we were pestered with mad dogs, goats, sheep, cows, in a way I never heard of in sunny England: certainly drought is not the exciting cause, for besides the endless streams, springs, and ditches, every little rut in the road has been a canal, and every displaced stone has left a little pool. Our first alarm was a sudden incursion of our servants after dinner to see if our dog was with us as usual; then rushing out, seizing him and turning him into the room in most marvellous haste, of which we vainly asked an explanation, till they were quite satisfied that all was safe, when they gave us the rather startling intelligence that a mad dog was on the rocks, and the whole country after him: and there, indeed, the poor creature was, jumping from rock to rock—hither and thither—trying to escape from his tormentors, very unlike the straight on-end running of a mad dog, whilst the people were firing away at him as fast as they could. We afterwards expressed great doubt of the case, but we were assured, "it was quite certain, for the dog made for the saa, which was a sure sign." They are horribly cruel in their manner of destroying the poor animals supposed to be mad. They threw a pony into the sea, and as the creature, who was very gentle, struggled to get out, they stoned it to death from the rocks. A cow they actually buried alive, and her struggles shaking the earth was quite a convincing proof that she was mad: in both cases they could have had a gun in five minutes for asking, but the cruelty did not seem to strike them: the fact was mentioned, and no more thought about it, had not our horror at the barbarity appeared to throw a new light on the matter. Is there, below their apparent good-nature, an indifference to the sufferings of others, whether it be a poor animal miserably slaughtered, or a family perishing in fires lit by the hands of their fellow-creatures, from which the peasantry of other countries would recoil?

Religion has always the same beneficial influence on the mind. In youth, in health, and prosperity, it awakens feelings of gratitude and sublime love; and purifies, at the same time that it exalts: but it is in misfortune, in sickness, in age, that its effects are most truly and beneficially felt; when submission in faith, and humble trust in the divine will, from duties become pleasures, undecaying sources of consolation; then, it creates powers which were believed to have been extinct, and gives a freshness to the mind, which was supposed to have passed away for ever, but which is now renovated as an immortal hope; then it is, as the Pharos, guiding the wave-tost mariner to his home; as the calm and beautiful still basins or fiords, surrounded by tranquil meadows and groves, to the Norwegian pilots, escaping from a heavy storm in the North Sea; or as the green and dewy spot gushing with fountains, to the exhausted and thirsty traveller, in the midst of the desert. Its influence outlives all earthly enjoyments, and becomes stronger as the organs decay, and the frame dissolves; it appears as that evening-star of light in the horizon of life, which, we are sure, is to become in another season a morning-star; and it throws its radiance through the gloom and shadow of death! —Sir Humphry Davy.

The christian profession chargeth us, to be quiet and orderly in our stations; diligent in our callings; veracious in our words; upright in our dealings; observant of our relations; obedient and respectful toward our superiors; meek and gentle to our inferiors; modest and lowly, ingenuous and compliant, in our conversation; candid and benign in our censures; innocent and inoffensive, yea, courteous and obliging in all our behaviour towards all persons.

O divinest Christian charity, what tongue can worthily describe thy most heavenly beauty, thy incomparable sweetness, thy more than royal clemency and bounty! How nobly dost thou enlarge our minds beyond the narrow sphere of self and private regard, into an universal ease and complacence, making every man ourself, and all concernments to be ours! How dost thou entitle us unto, how dost thou invest us in, all the goods imaginable; dost enrich us with the wealth, dost prefer us with the honour, dost adorn us with the wisdom and virtue, dost bless us with all the prosperity of the world; whilst all our neighbour's good by our rejoicing therein becometh our own! How dost thou raise a man above the reach of all mischiefs and disasters, of all troubles and griefs, since nothing can disturb or discompose that soul wherein thou dost constantly reside and absolutely reign! How easily dost thou, without pain or hazard, without drawing blood or striking stroke, render him that enjoyeth thee an absolute conqueror over all his foes, triumphant over all injuries without, and all passions within; for he can have no enemy who will be a friend to all, and nothing is able to cross him who is disposed to take everything well? How sociable, how secure, how pleasant a life might we lead under thy kindly governance! What numberless sorrows and troubles, fears and suspicions, cares and distractions of mind at home, what tumults and tragedies abroad might be prevented, if men would but hearken to thy mild suggestions! What a paradise would this world then become in comparison to what it now is, where, thy good precepts and advices being neglected, uncharitable passions and unjust desires are predominant! How excellent, then, is that doctrine which brought thee down from heaven! and would but man embrace thus the peace and joy of heaven with thee!—Dr. Isaac Barrow.

LONDON:
JOHN WILLIAM PARKER, WEST STRAND.
Published in Weekly Numbers, Price One Penny, and in Monthly Parts, Price Sixpence.
Sold by all Booksellers and Newsvenders in the Kingdom.

THE

Saturday Magazine.

No. 629. APRIL 23RD, 1842. { PRICE ONE PENNY.

THE NEILGHERRY HILLS, AND THEIR INHABITANTS. II.

A TUDAR FAMILY IN THE NEILGHERRIES.

When the Tudars of the Neilgherries are spoken of as a tribe possessing characteristics superior to those of the surrounding natives, it must be remarked that this applies to a certain degree of natural intelligence, capable, if well directed, of raising them to a respectable footing in the social scale. Practically speaking, their lives present much that we must lament.

Captain Harkness, after several unsuccessful attempts to discover their religious notions, contrived to gain admission to one of their temples. This temple was in a morrt or family village, at some distance from the inhabited huts; and on opening the door, he found the interior to be divided into two apartments by a partitioned wall. The outer apartment was about ten feet by eight, but only of sufficient height in the centre to stand upright; on two sides were raised benches, a foot and a half from the ground, intended to recline or sleep on; and in the middle a large hearth or fire-place, surrounded by a number of earthen pots, and other utensils. The door-way in the partition-wall being much smaller than the outer one, it could only be entered by a person lying nearly flat on the ground. This apartment was furnished with earthen vessels the same as the outer one; and it became evident to Captain Harkness that these vessels were the same as those used in the dairy, and that no idols or images were in the room. On mentioning his surmises to the Tudars, they frankly told him that theirs was little more than an affectation of a worship resembling that of their neighbours; by which they were enabled to keep on good terms with them. There is, certainly, nothing to regret in the circumstance that these Tudars are *not* Hindoos or Buddhists: but on the other hand there is not the consolation of thinking that they profess a purer faith. The only points which Captain Harkness could at all ascertain were, that they salute the sun at his rising; that they expect to go to a country called Huma-norr after death; and that the dairy, with all its contents, is looked upon as a sacred spot, which the men can only enter after having performed certain ablutions.

We must now direct a little attention to the *Badacars*, the most numerous of the Neilgherry tribes, but of far different character from the Tudars. The latter assert

claim to the soil of the hills, and declare that it was only by their sufferance that the other tribes came to reside on it, and that they receive a payment in kind for the use of the land. Of the tribes here alluded to, the Badacars, who but a few generations ago emigrated hither in escaping from the tyranny and oppression of former masters, and who are ten times more numerous than the Tudars themselves, behave to the latter with a respect and observance denoting that they either consider them superior in natural qualities, or that this deference is due by prescriptive right. The Badacars are, however, a timid race, deeply imbued with superstition; and the Tudars, superior to them in stature, carriage, and demeanour, and distinct from them in religion, language, manners, and mode of life, display an apparent consciousness of superiority, which the others tacitly admit.

The Badacar is less in stature than the Tudar, of a more slender form, and though straight and well-made, undersized in limb. In complexion, both male and female are some shades lighter than the Tudars; but their features are quite of another cast; and those of the females, though by no means bad, are devoid of that lively transition in expression so remarkable in the Tudar women. The dress of the men consists of an upper and under garment, together with a turban, or some kind of cloth wrapped round the head. The dress of the women is rather different from that of the Tudar women, consisting of a sort of petticoat tied in an uncouth manner about the body. Mr. Bacon, who visited the Neilgherry hills some years after Captain Harkness, says of this female attire:—

The costume of the women, though very original, appears susceptible of improvement, inasmuch as discomfort and unsightliness would seem to have been the desiderata of the invention. It consists of a peculiar style of petticoat—to call it rude, to call it uncouth, barbarous, would give no adequate notion of its incongruous discomfort and unsightliness—made of the very crudest description of coarse hempen cloth, in the fashion of an elongated sack, but open at bottom. Being tied by a running string immediately under the arms, it descends to the ankles, leaving the neck, shoulders, and arms bare; and again, it is confined at the knees, in the same manner, by a second string; so that it is impossible for the wearer to take an extended step; the inconvenience of which, in a mountainous country, may be readily conceived.

As the Tudar loves to range at liberty over his native mountains, while the Badacar applies more patiently to industry, the latter acquires better habits of domestic economy, and lives in a more permanent and durable dwelling. A Badacar village usually consists of two rows of houses, with low verandahs projecting from their fronts. The roofs of the dwellings are supported on posts, and the intermediate spaces filled up with a strong wattle-work, which, covered with several coats of plaster, forms a tolerably substantial wall. Exclusive of the verandah, each dwelling is divided into two apartments, the outer one rather larger than the inner, which is separated from it by a wall provided with a low door. In the inner apartment is the hearth or fire-place, where a fire is kept constantly burning, serving as well to cook the food, as to furnish warmth. There is neither chimney or window; so that light must come in, and smoke go out, at the door by which the inmates enter and leave the dwelling. In front of each row of houses is an area, twenty or thirty yards in breadth, bounded by a low stone wall, and formed of well-beaten, hard, dry ground: this serves as a floor for threshing, winnowing, and drying grain. At one end of the village is a circular space in which oxen tread out the larger kind of grain, such as wheat or barley; and at the other end is a kind of farm-yard, in which are inclosures for cattle, stacks of straw, fodder for cattle, broods of domestic poultry, implements of husbandry, &c. These form a very striking characteristic of the Badacars, when compared with the Tudars, who, as we before observed, rear nothing but buffaloes, and cultivate no kind of grain or vegetable food whatever.

Captain Harkness had an opportunity of witnessing some singular customs observed by the Badacars near one of their villages, in relation to the cultivation of the soil. A family of Badacars had assembled, the head of which was about to commence ploughing. With them were two or three Curumbars, one of whom had set up a stone in the centre of the spot on which they were standing; and decorating it with wild flowers, he prostrated himself to it, offered incense, and sacrificed a goat, which had been brought there for this purpose by the Badacars. He then took the guidance of the plough, and having ploughed a few yards, gave it up, possessed himself of the head of the sacrificed animal, and left the Badacar to prosecute his labours. Some such ceremony as this also takes place when they are going to sow, and likewise when they are going to reap; the Curumbar sowing the first handful, the Badacar sowing the remainder; the Curumbar reaping the first sheaf, and the Badacar reaping the remainder. On such an occasion as the latter, the Curumbar is allowed to carry away as much of the new crop as he likes; but the grain contained in the sheaf which he reaped, is that day reduced to meal, made into cakes, and being offered as a first-fruit oblation, is, together with the remainder of the sacrificed animal, partaken of by the Badacar and the whole of his family, as the meat of a federal offering and sacrifice. At harvest-home, or when the whole of the grain has been gathered in, the Curumbar receives his dues, or his proportion of the produce, consisting, on an average, of about one sixtieth part of the whole.

Our attention may next be directed to those inhabitants of the Neilgherry hills who are called *Cohatars*. Every hill and mountain side occupied by this tribe is called a Cotagherry, that is, a Cohatar-hill. Every Cohatar village has belonging to it a circle of Badacar hamlets or villages, from which they claim, at periodical seasons, the payment in kind of certain fees or dues, and for which they in return furnish the Badacars with, or rather make for them (the latter supplying the material), their implements of woodcraft and husbandry, the principal part of their pottery, and such basket-work as they require, assist them occasionally in gathering in their harvest, and attend with their pipe and tabor on their funerals, marriages, &c. These fees are generally paid in a certain quantity of whatever grain the Badacar has cultivated.

The Cohatar villages and houses differ but little from those of the Badacars, except in being less neat and clean. In every village are two buildings appropriated to sacred purposes; of rude construction, being little more than pent roof sheds, thatched with grass, open at one end, and surrounded with a low wall of stone. One of these is devoted to a god called Carmataraya, and the other to a goddess named Sacti; but in neither is there any image or symbol. On one of the posts supporting the roof are nailed plates of silver, which have something to do with the reputed sanctity of the place. Vows and offerings are made in these temples; and about the month of March a general festival is held, which lasts from the new moon to the full, and during which all the offerings that had been vowed are collected. The ceremonies attendant on this festival are curious. The person who has been nominated to perform the priestly office, and who is chosen from a select number of families, collects the whole of the voted offerings, which generally consist in money, each family contributing as much as their means will allow. With this money he procures, generally from the low country, different kinds of grain, sugar, and two or three other articles; and exhibiting the whole in front of the temple, he prostrates himself towards it. This rite being performed, the different articles are delivered over in various proportions to others of the priestly caste, who prepare and dress them

for food. The whole is now again offered in front of the temple, when the officiator makes a short prayer, for prosperity to the community during the ensuing year; and a large pit being dug, it is lined with leaves, the dressed food put into it, mixed up together, and distributed in portions to the whole of the village. In the evening a large bonfire is made, around which the whole join in a dance, which generally lasts till towards midnight. The same scene takes place on the next and the following days, until the moon is at her full; and during the whole of this period all labour is suspended. On the day of the full moon, after the whole have partaken of the feast, the blacksmith and the silversmith of the village construct each a forge and furnace within the temple, and fabricate something in the way of his avocation,—the blacksmith a chopper or axe, the silversmith a ring, or other ornament. These two smiths are reckoned as the principal artizans of the village; and the practice of each one exhibiting his art in the temple seems to be intended to propitiate the god to whom the temple is dedicated.

Although the Cohatars keep many cows and female buffaloes, they never milk them, nor does milk form any part of their diet; and when they use butter or ghee, which is but seldom, they purchase it from some of their neighbours. Their principal avocation is husbandry, in which they are greatly assisted by their women. Barley, and one or two other kinds of meal, mixed up with water, —the grain being parched before it is ground,—form the common food of these people; but they are particularly fond of flesh of almost every description, whether from a wild or tame animal. Captain Harkness on one occasion, when many miles distant from any of the Cohatar villages, observed, within a copse at a short distance, a group of Cohatar men, women, and children, sitting round a fire, from which smoke was arising. It appears that a merchant had on the previous evening conveyed a drove of bullocks up the mountain; that one of them had died on the road; and that the Cohatars had seized on it as a grand treat. They had made their repast on it, cut up and soddened the remainder, which was suspended to the end of little poles, and with some of which one or two of the party were already preparing to depart. At a short distance lay the hide, carefully rolled up, and around them the horns, bones, feet, and such parts as they thought not worth the carriage.

The other tribes which we have named, as occupying portions of the Neilgherry hills, are in their appearance, religion, character, and occupations, a mean between the singular people already described and the regular Hindoos of the southern parts of India. We shall therefore refrain from describing them, since the foregoing details will furnish the materials for forming some estimate concerning them. Unquestionably the Tudars are the most remarkable of them all. The strange mixture of natural intelligence and beauty of form, with a very rude state of civilization and social communion, is such, that Captain Harkness, after spending much time among them, and enquiring very diligently into the circumstances of their position and character, terminates his interesting narrative with the question,—

"WHO CAN THEY BE?"

IT is pity, but it is no less true, that I have observed in some of my friends, who, when their memories represent a thing to them entire, and as it were in present view, begin their story so far back, and crowd it with so many impertinent circumstances, that if the story be good in itself, they spoil it, and if it be bad you are either to curse the strength of their memory, or the weakness of their judgment. It is a difficult matter to close up a narration, and to cut it short in its career. Neither is there anything that more discovers the strength of a horse, than when it makes a full stop with a grace; and of those men who talk pertinently, I know some who would, but cannot, stop short; for whilst they are seeking a period for the narration, they talk idly, and drawl out their words like men that have scarce strength to utter them.—MONTAIGNE.

STRATHFIELDSAYE,

THE COUNTRY RESIDENCE OF THE DUKE OF WELLINGTON*.

STRATHFIELDSAYE, though a fine place enough, would scarce attract much of the traveller's notice, were he not informed that it was the seat of the most illustrious man of his age. It was originally the seat of the Earls Rivers, and is situated upon one of the edges of the county of Berks; being distant from Reading about eight or ten miles, and from London not more than fifty. Your readiest means of access to it is by the South Western or Southampton Railroad, which you may quit at Farnborough station; and as all sorts of conveyances are to be had there in abundance, a drive of an hour, or an hour and a half, will carry you to the park paling, and by-and-by to one of the gates. Not much can be said of the fertility of the country, in the heart of which Strathfieldsaye is planted. On the London side, at least, there are many miles of waste, over which the heath waves in luxuriant crops, and multitudes of firs—most of them self-grown—are scattered; while the hamlets and detached cottages which, at wide intervals, break in upon the dreary scene, are precisely such as one would expect to see in a district imperfectly settled. Still, there are patches here and there of very pretty scenery too. You may fancy yourself travelling through a forest, from amid the openings in which you obtain glimpses of various well-wooded hills, almost all of them surmounted or adorned along the side, by a gentleman's seat; for besides the hospitable hall of Sir John Cope, and the residence of the good-humoured Speaker of the House of Commons, there are several country houses gathered within what is considered a visitable distance of Strathfieldsaye; and most of these standing in situations at once elevated and conspicuous, the general effect is in some measure to counteract the impression which the more sterile nature of the land immediatly about you may have made.

Everything in and around the family seat of the house of Wellington is unpretending in the extreme. You enter a park of not much more than moderate extent, by a common wooden gate, beside which stands a lodge absolutely unadorned: it is neither more nor less than a cottage, of which the walls are made of brick, while the roof is covered over with thatch, not of yesterday's fabrication. A long sweep of avenue is now before you, the view on either side of which exhibits no particular point of attraction such as might compel you to stop short for the purpose of admiring it. The grounds have indeed a few slopes or falls, the most extensive of which ends in a sort of valley, through which runs the river Lodden, passing close in its onward progress to the mansion. The timber, too, is abundant, yet it is nowise conspicuous for its bulk. There are groves, thickets, and plantations of course; while inside the paling you find the ordinary garnishment of gnarled oaks and antique thorns But no lover of the picturesque and beautiful would ever think of quoting Strathfieldsaye as justifying him in the preference which, as a general rule, he is bound to give to the seats of the English aristocracy above those of all other aristocracies.

Along this road you drive, and by-and-by, in the remote distance, the house of the hero of a hundred battles becomes faintly visible. It lies very low—quite, or almost quite, upon a level with the river; indeed the stream is separated from the drawing-room windows only by a narrow slip of lawn and shrubbery. A clump of tall trees—if we mistake not, of the birch and ash kind—screens, and in some sort embowers it, on the flank; and the consequence is, that never having obtained a very accurate survey, your view becomes more obscure in proportion as you approach. But as the distance from the park-gate to the site of the mansion cannot exceed a mile, your postilion soon rattles over that, and then speculation ends by an abrupt display of all that is to be seen.

The mansion-house lying on the other side of the river, you cross a bridge, at the farther extremity of which the boughs of the beech grove over-shadow you. Through that you pass rapidly, when a turn to the left brings you upon the commencement of the drive, which terminates in a broad gravel plat. You are now in front of the house. Look about you, and see what is there. The house itself, built in the reign of Queen Anne, partakes, both in its architecture and general arrangements, of the spirit of the age that produced it. Long and low, with very tall chimneys, its whitened wall and gray slate roof, lack the dignity of the Elizabethan era, without putting on the air of spruce-

* From the *John Bull*.

ness mixed with comfort which characterises the generality of more modern edifices. It presents two rows of windows, which stretch, at measured distances, all along its front. The hall-door, graced on either side by pillars, and covered by a flat roof of trifling breadth, occupies the centre of the pile; and there are little wings, which differ only from the main body of the edifice in being by one story lower. But it is not from the somewhat unattractive form of the mansion that you are enabled at a glance to fix the date of its construction. Facing the entrance, and separated from it only by a road, which measures perhaps one hundred or a hundred and twenty feet in breadth, are the stables, which, with the groom's apartments, the kennel, tennis-court, and one or two out-buildings besides, make up a sort of village, or rather street, of themselves. All this is completely in the French taste of the day, when Marlborough was running a career, the glory of which Wellington has since surpassed. You feel at once that the place ought to be inhabited by the contemporaries of Harley and Dean Swift.

When you have passed the threshhold you enter upon a hall—oblong and somewhat low in the roof—which is paved with flat freestone, and warmed by a fire which burns cheerily in an old-fashioned English grate. The hall is well closed in; but the further door being opened, you find yourself in a narrow passage, which runs the entire length of the mansion, and gives the means of ingress to the suite of public rooms which occupy the basement story. These consist of a drawing-room, library, dining-room, and the Duke's own room, all opening one into the other, and in their general shapes all perfectly agreeing. They are such as one would expect to see hung round with paintings, being somewhat narrow for their length, and otherwise present the appearance of a continuous gallery. The furniture is as plain as can at all agree with perfect elegance. Not a single work of art adorns the apartments, except, indeed, that the dining-room, besides being traversed by pillars, has its walls covered over with very curious engravings. But neither the painter nor the sculptor has been employed to adorn an edifice on which it is easy to perceive that the owner has never cared to bestow too much attention. Everything, therefore, about it is good, and substantial, and comfortable of its kind; but you look in vain for the splendour which greets you, at every step, in Blenheim; you are still in the dwelling of the Rivers, not in the palace of a Wellington.

The library, which is an excellent room, contains a tolerably extensive collection of books. They are chiefly modern, as may be supposed, and not a few consist of copies of works which the authors, the natives of every country in Europe, have felt themselves honoured by being permitted to present to the most illustrous of living men.

To the sleeping apartments the same description applies, by which we have endeavoured to bring into the reader's mind some idea of the living rooms. They are all good—some being in point of size larger, and others less—and they are everywhere furnished with a becoming regard both to convenience and good sense—but this is all. You enter them from a corridor which runs the whole length of the building, and to which two or three different staircases, none of them ornamental, conduct from the basement story. It may not, perhaps, be out of place to state, that the apartment which used to serve as the nursery, when the Marquis of Douro and Lord Charles Wellesley were children, looks out upon the gravel drive in front of the house, and has its windows down to the floor; two circumstances to which the Duke, when his friends get him upon topics purely domestic, has been known thus to allude. It seems, that returning home one day from hunting, his Grace saw the two boys thrust themselves so far over the window to greet him, that even he felt nervous for the issue. He did not, however, say one word which might have either startled or agitated them; but dismounted, walked in, and sat down in his chair. "Well," was his remark, when the nurse brought the boys down, "I never knew, before to-day, why the nursery was placed there. But I see now that you have chosen the room from which the boys may most conveniently break their necks, if they be so inclined."

The grounds about Strathfieldsaye are neat, and the walk upon the lawn, which interposes between the house and the river, is very pretty. So is the tortuous path which leads through the shrubbery; but here, as well as elsewhere, there is a total absence of all pretension. The same thing may be said of the stables and coach-houses; all of which do their duty well, though they are all barren of ornament. The tennis-court, also, though an excellent one, is as little assuming as need be; and of the gardens no more can be said than that they are well kept, and abundantly productive. It is, however, characteristic of the high-minded owner of the soil, that within a few minutes' walk of the house, stands the parish church, a neat and simple edifice, which was repaired, within these fifteen years, by the Duke, and fitted up, both within and without, with equal taste and modesty. Neither has his Grace been unmindful of the wants of the incumbent. We rather think that the parsonage house, which is not more than fifteen years old, was rebuilt in like manner entirely at the Duke's expense; but, however this may be, we know, that long before the passing of the Tithe Commutation Bill, his Grace provided that in his parish no grievance of tithe should be felt. Owning all the property, he paid out of his own pocket an ample stipend to the incumbent, and thus left his tenants free to reep the advantages of any improvements in agriculture which they might introduce.

At Strathfieldsaye the Duke of Wellington is not able entirely to divest himself of his public character. As Lord-Lieutenant of the county he is open to the innumerable claims upon his time of county business, and he makes a point of being at home to entertain the judges, as often as they pass on the circuit towards his neighbourhood. It is here, too, more than at Walmer Castle, that he receives the visits which royalty occasionally pays him. Here he entertained, in other times, George the Fourth. Here King William and Queen Adelaide have spent some pleasant days; and here, unless public rumour be an idle babbler, Queen Victoria and her princely husband may in like manner be expected, sooner or later, to become his guests. When such matters do not interfere with his purely domestic arrangements, the habits of the noble Duke at Strathfieldsaye are quiet, unostentatious, and philosophic. He breakfasts with his company at ten, retires to his own room afterwards, devotes several hours to his endless correspondence, except on hunting days, and goes out, either to ride or to walk, about two. Seven is his dinner hour, and often after tea he forms one at a quiet rubber of whist, where the stakes played for never exceed five-shilling points.

The estate of Strathfieldsaye was purchased for the preserver of his country, out of a sum of money voted to him by Parliament, in 1815. We do not exactly know to what its yearly value may amount, but there is a fact connected with it which deserves to be put upon record, and we therefore state it. Not one shilling of rental has the Duke of Wellington ever expended, except upon the improvement of the property. He neither lays by so much a-year in the Funds, nor does he consider himself entitled to devote the money derived from it to his own uses. "I am a rich man," is his argument, "which the next Duke of Wellington will not be. I am, therefore, determined that he shall receive his patrimony in the very best order; and if he cannot keep it so, the fault will not be mine." The consequence is, that go where you may, whether far or near, you will nowhere see a body of tenantry better lodged, better provided with offices, better supplied with all manner of conveniences for the prosecution of their calling, than those which call the Duke of Wellington their landlord. And though the land be not perhaps the best that England can produce, it is everywhere in the highest state of cultivation of which it is susceptible. As a matter of course, the Duke's tenants are exceedingly well pleased with their lot; indeed, a more popular man than he, among all classes of his neighbours, it would be hard to find.

Strathfieldsaye used to be famous for the quantities of game in its preserves. Latterly the game has been somewhat neglected, and the consequence is, that the shooting is not now what we remember it. But you may still get a capital day's amusement, if you do not mind walking for it; and no true sportsman grudges a little strain upon his limbs. There are besides hounds in the neighbourhood, to which his Grace subscribes, and of which he used to be a determined follower. He still rides out with them occasionally, and is never seen without winning from high and low marks of the most affectionate reverence. But, alas! alas! upon him, not less than upon other sublunary things, time will exert its influence, and although the noble mind remains perfect as it ever was, the iron frame is yielding—by slow degrees, indeed (may they be ever such!)—to decay. The Duke is a wonderful man to have spent three score years and ten as he has spent them; but we doubt whether he could now ride twenty-five miles to cover—hunt, ride home, and afterwards travel to London, without experiencing a moment's inconvenience from the exertion. Yet we remember his doing this just ten years ago.

ON THE SITUATION OF THE EAR IN ANIMALS.

SKULL OF THE POLE-CAT.

SKULL OF THE HARE.

THE situation of the organ of hearing in animals is admirably adapted to their different habits and necessities, and furnishes an illustration of the wise and beneficent arrangement visible throughout nature.

This adaptation of the organ to the peculiarities of the species cannot be better shown, than by exhibiting to our readers the representations of the skulls of the hare and of the pole-cat. The former of these animals seems constituted for flight, and being the constant object of pursuit, is indebted for much of its safety to a quick perception of danger by means of the external senses. Of these perhaps the most remarkable is the ear, which, viewed externally, is a long open appendage, generally inclining backwards, but also occasionally forwards, or laterally. It serves as an excellent medium for collecting sounds, and transmitting them through the bony portion of the canal to the internal ear. Dr. Farrar has minutely investigated the organ of hearing in several animals, and tells us, in the case of the hare, that the tubulated bony portion of the external ear is nearly half an inch in length, and a quarter of an inch in diameter, pointing backwards and upwards at an angle of forty-five degrees, or thereabouts. The backward situation of this external tube is supposed by the same authority to prevent the animal from hearing distinctly any sounds in front of her; in illustration of which the following circumstance is named. A hare, closely pursued by hounds along a turnpike-road, was seen by a woman approaching her immediately in front; she knelt down and stretched out her apron, and poor puss, alive only to the dangers from behind, ran fairly into her lap.

The direction in which sounds are principally received by this animal, is shown in our illustration by lines drawn from the tubes which convey the perception to the internal ear. The situation of these tubes cannot fail to strike us as being admirably adapted to the necessities of the timid animal, for whose warning and protection their position was undoubtedly designed.

Our next instance displays a perfect contrast in the *direction* of the organ, and also a slight difference as to situation. And the reason is obvious, when we remember that the pole-cat (whose skull is the object of our second wood cut) is a pursuing animal, and therefore requires the aid of its senses in receiving communications principally from before. The auditory tube in this animal is similar in length and diameter with the hare's, but points downwards and forwards instead of backwards. "When we consider the habits of this animal," says Dr. Farrar, "and behold the structure containing one sense, acting in concert with, and supporting another still more valuable to the animal's existence, we cannot but wonder at the excellence of the arrangements that provides for wants which mere human ingenuity can only comprehend, but could never supply." As a proof that the sense of hearing is much less acute in the pole-cat from behind than before, the following anecdote is given. A farmer had his poultry disturbed during several successive nights, but could not make out the cause, till one day he discovered a couple of pole-cats gambolling in a very frolicsome manner. Without disturbing them, he returned hastily to his house, got his gun loaded, and then went back to look for his visitors. Approaching them cautiously from behind, he was enabled to come within a very few yards of them: he levelled his gun, but it missed fire. This occurred five or six times without a single spark being elicited from his flint; and notwithstanding all this hammering in their rear, the animals never were in the least alarmed. At last he was more successful, and killed one of them, but the other made its escape.

Unlike the case of the hare or the pole-cat, is that of the fox, whose organ of hearing, instead of being an elongated tube, is an almost circular aperture, expanding principally from behind and in a forward direction. This opening is well adapted for receiving sounds from above, especially when the head is thrown laterally and upwards, as it is the habit of the fox, when listening beneath a hen-roost, or under a tree where his unconscious victims are perched.

In each instance, and in every case that may come within our observation, we shall find much to admire in the beautiful provision that is made for the necessities of animals, with respect to this one faculty alone; and it is with a view to direct greater attention to the subject, that we have brought it before our readers at the present time.

YOU say, if I mistake not, that a wise man pursues only his own private interest; and that this consists only in sensual pleasure: for proof whereof you appeal to nature. And you conclude, that, as other animals are guided by natural instinct, man too ought to follow the dictates of sense and appetite. But, in this, do you not argue as if man had only sense and appetite for his guides? on which supposition, there might be truth in what you say. But, what if he have intellect, reason, a higher instinct, and a nobler life? If this be the case, and you, being man, live like a brute, is it not the way to be defrauded of your true happiness? to be mortified and disappointed? Take a hog from his ditch or dunghill, lay him on a rich bed, treat him with sweetmeats, and music, and perfumes. All these things will be no amusement to him. You can easily conceive, that the sort of life which makes the happiness of a mole or a bat, would be a very wretched one for an eagle. And, may you not as well conceive, that the happiness of a brute can never constitute the true happiness of a man.—BISHOP BERKELEY.

THE HAIR HARVEST OF FRANCE.

The months of April and May are regularly employed, throughout many districts of France, in gathering in what appears to the English a very novel kind of harvest. The purchase and sale of human hair has become within the last fifteen years so important and extensive a branch of commerce to the French, that numerous establishments exist for the furtherance of the trade, and a great number of hawkers or hair-cutters are sent out annually from each of them to purchase the tresses of their young country-women. These hawkers are well laden with such merchandize as they find most in request among the rustic beauties of the district, and thus they are often able to make a good bargain, by exchanging their muslins, kerchiefs, and calicoes, for the abundant and valuable locks of the damsels. They never fail to be present at festivals, fairs, and markets; and many a lass returns to her village from such places, laden indeed with trivial articles of ornamental mercery, but shorn of the ringlets which form a far more graceful and natural adornment.

So constant and regular is this traffic that the hair-cutters know exactly where to go for their year's crop. Keeping an account of the villages from which they gathered their supply for a certain year, they know that they will not be able to cut in the same places till the arrival of another given year. And not only can they calculate as to quantity, but the value of each local harvest is also well known, and almost fixed; for within a space of from ten to fifteen leagues, the quality varies so much as to make a difference of from ten to twenty sous per pound weight.

The produce of the harvest is sent by the hair-cutters to their respective masters, who intrust to other workmen the task of dressing and sorting it according to value and length. It is then sent to Paris, Bordeaux, Marseilles, Lyons, and the fairs of Caen, Guibraie, and Beaucair, whither strangers resort to make their purchases. That which is intended for conversion into perukes in either of these cities, is consigned to those tradesmen whose business it is to clean, curl, and prepare it for the purpose intended to be served by it.

The original price of the hair, as purchased from the village maidens, is five francs (four shillings and twopence) per pound. The tradesmen engaged in the preparations above-named, purchase it at the price of ten francs per pound, and after it has gone through their hands, it acquires a value of from twenty to eighty francs per pound weight, and this is the rate at which it is purchased by the hairdressers. By the skill of the hairdresser, the price is again raised to an almost indefinite extent; and must be calculated by the degree of labour and dexterity employed on it. Thus a peruke, containing only three ounces of hair, originally costing a franc, is frequently sold at the price of twenty-five francs.

The quantity of hair produced by the annual harvest is calculated at two hundred thousand pounds' weight. The sales of one house alone in Paris, which supplies four hair-cutting establishments in the western country, amount to four hundred thousand francs annually. Nor is the trade to be considered in itself alone. It indirectly benefits several others, especially the silk manufacture. The lining of perukes formerly consisted of a coarse net work, but was afterwards superseded by a fine silk network, which for a long time was purchased of the English at fifty francs, but is now so extensively made in France, that the English are glad to avail themselves of the manufacture of Lyons, where the same article is sold at ten francs. Silk linings and ribands are made in that city for a million perukes a year. Metallic clasps and fastenings are also made and sold, to the amount of one hundred thousand francs yearly.

By the report of the great national exhibition of arts and sciences at Paris, in 1834, we learn the quantity of the hair wrought and unwrought exported in several years. From this we will take that of 1832, remarking that of the large portion thus exported, a great part went to England and the United States. The quantity of unwrought hair amounted to 16,551 kilogrammes, at the value of 132,408 francs, while that of wrought hair, in the same year, was 13,741 kilogrammes, at the value of 137,410 francs.

It is remarked in the same report that this trade is one doubly interesting to France, as employing the materials of the country only, with petty exceptions. Far from causing French capital to leave the land, it causes capital to enter, both for the material and the manufactured article. But in truth the French hair-dressers supply the made perukes to almost all foreign lands. Britain derives considerable customs (thirty per cent. of duty) on imported hair articles, yet London merchants bring them from Paris for transmission to the British colonies.

It is necessary to remark, respecting the value of the exports named above, that an agreement is made that only two-thirds of its real value should be given in at the custom-house, which is quite possible with such an article, and causes a great saving.

Whoever shall write the political history of that invaluable plant, the Cotton-shrub, will have a more important work to perform than has ever fallen to the lot of a biographer of statesmen or philosophers. I will venture to say, without going more into details, that the single circumstance of bringing the wonderfully cheap fabrics produced by modern machinery within the reach of even the humblest of the labouring classes, of substituting decent and comfortable raiment for the few scanty and filthy rags, the squalid exterior, which make poverty not only more painful, but at once more humiliating and degrading to its victim, and more disgustful to others than it ought to be, will signally contribute to elevate the condition of the poor in the social scale, to raise their self-esteem, and to increase the sympathy of others for them; in a word, to make them feel themselves men, entitled to a place among men; not pariahs and outcasts, whose contact is contamination. A people well clad and well housed will be sure to provide themselves with all the other comforts of life; and it is the diffusion of these comforts, and the growing taste for them, among all classes, it is the desire of riches, as it is commonly called, that is gradually putting an end to the destructive and bloody game of war, and reserving all the resources hitherto wasted by it, for enterprises of industry and commerce, prosecuted by the fiery spirit which once vented itself in scenes of peril and carnage.

And how is the face of Europe changing by means of such enterprises! I have travelled in parts of the Continent which the spirit of gain, with its usual concomitants, industry and improvement, has invaded since the peace, at an interval of fifteen years; and have been struck with the revolution that is going on. There is a singularly beautiful, though rather barren, tract of country between Liege and Spa, where, in 1819, my attention had been principally attracted by the striking features of a mountainous region, with here and there a ruin of the feudal past, and here and there the hovel of some poor hind,—the very haunt of the "wild-boar of Ardennes" in *the good old times* of the House of Burgundy. I returned to it in 1835, and saw it covered with mills and factories, begrimed with the smoke and soot of steam engines; its romantic beauty deformed, its sylvan solitudes disturbed and desecrated by the sounds of active industry and the busy hum of men. I asked, what has brought about so great a change, and found the author of it,—a man having a more numerous band of retainers and dependents than any baron bold of the fourteenth century, and in every respect more important than many of the sovereign princes on the other side of the Rhine,—was an English manufacturer, who had established himself there some twenty years ago, without much capital, and had effected all this by his industry and enterprise.—Legan.

RURAL ECONOMY FOR THE MONTHS.

IV.

APRIL.

Hail! pleasant month, that lead'st the way
From March austere to smiling May
Allied to each! The morning's frore
Now and again with mantle hoar
Array'd; the dry and biting blast
Shrewd from the north; the sky o'ercast
With fleet and oft-recurring shroud
Of sleety storm and darkling cloud;
Claim kindred to thy brother *March*.
On that dark cloud the braided arch
Imprest; the sparkling sunshine bright,
That now with countless gems of light
The meadows' grassy surface spreads
Resplendent, and with slanting threads,
Pierces the falling rain-drop's veil,
Now beams unclouded, while the gale
Breathes sweetness from the blooming spray,
Show likeness to thy sister *May*.

In this cheering month, when nature throws aside her wintry garb, and discloses a thousand fresh and pleasing forms of vegetable life, the agriculturist has an especial interest in watching the tokens of the advancing spring, and noting the appearance of the various crops. He is now able to estimate the effect of the past season on the grain committed to the earth during autumn; and he already begins to calculate as to the probable nature of the return it will yield to him, not forgetting, however, that favourable or unfavourable circumstances may occur to alter the prospects afforded at this early season. In traversing the richly cultivated districts of our fertile land at this period of the year, how much is there to excite our admiration, and to inspire us with gladness! Who can look with indifference on the vesture of the different trees and plants, now renewed in grace and beauty; on the tender green of the larch and the hawthorn, the bright wreaths of the chesnut, the pale foliage of the lime, the delicate sprays of the birch, the glossy young leaves of the beech, and the rougher, and more stately masses of the elm? The blossoming trees too; how lovely and attractive they are! whether nursed and sheltered by the care of man, as the peach, the apricot, the nectarine, &c., or growing wild in the hedges, as the sloe or the crab. Nor wants there many an attractive blossom among the lowlier plants, to gratify the sight and smell. The primrose and the cowslip, the ground-ivy, the strawberry, the violet and daffodil, are but a few of these: there are also—

With pale green bloom the upright *Box*,
And woodland *Crowfoot's* golden locks;
And yellow *Cinquefoil's* hairy trail;
And *Saxifrage*, with petals pale;
And purple *Bilberry's* globe-like head;
And *Cranberry's* bells of rosy red;
And creeping *Gromwell*, blue and bright;
And *Cranesbill's* streaks of red and white,
Or purple with soft leaves of down;
And golden *Tulip's* turbaned crown,
Sweet-scented on its bending stem;
And bright-eyed *Star of Bethlehem*.

But these pleasant sights must not divert our attention from the rural occupations of the month. The early part of April is employed in continuing those labours which we described as forming the business of March. During this month barley and oat sowing are frequently completed, the main crop of potatoes is committed to the soil; summer vetches are sown, and fallows intended for turnips, are cross ploughed. Towards the end of the month, as well as during May, top-dressings of manure are applied to wheat, barley, and other crops; and we may here notice a few of the substances which have become extensively used within the last few years, since chemical knowledge has been so advantageously applied to agricultural affairs.

The first we shall name is gypsum, or sulphate of lime. This substance is a compound of sulphuric acid and lime, in the proportions of fifty-five parts lime to seventy-five sulphuric acid. Common gypsum likewise contains a considerable quantity of water, united with its other constituents. Gypsum is sometimes found in nature uncombined with water, but in this state is known by the name of *anhydrous selenite*. When this kind of gypsum, or when that which has been deprived of water by heat, is made into a paste with water, it combines so rapidly with the fluid, that it quickly forms a valuable cement. Plaster of Paris is nothing more than powdered dry gypsum, to which water has been added, in sufficient quantity to form a coherent mass. Gypsum is soluble in about five hundred times its own weight of cold water.

The employment of gypsum as manure has been attended with most remarkable success in America. It was first introduced there by Franklin, on his return from Paris, who sowed the gypsum on a field of lucerne near Washington, so as to form the words "This has been sown with gypsum." The effects were such as to astonish all who saw them, and the manure soon gained a widely extended reputation.

There are perhaps few parts of England in which this noted manure has not been tried in various ways, and upon different crops; and though the result has not been always so successful as to answer the high expectations of agriculturists, it is still in deserved and increasing reputation in many districts of our land. According to Liebig, the influence of gypsum upon the growth of grasses, and the fertility of the meadows where it is strewed, depends only upon its fixing in the soil the ammonia of the atmosphere, which would otherwise be volatilised with the water which evaporates. The majority of the leguminous plants afford considerable quantities of gypsum, and since this substance is to them an essential ingredient, it is not difficult to understand that fresh supplies of it should have a fertilising effect; but it is also serviceable to turnips and cabbages, which do not appear to contain it, and it has been recommended, in conformity with the theory above noticed, to extend its application to other crops, and also to mix it with the manure of the stables, in order to prevent the waste of ammonia constantly going on.

Nitrate of soda forms in many places a valuable manure, and is now extensively employed for that purpose. This salt may be formed either by adding the metal sodium, or its oxide soda, to nitric acid; but it has been largely imported of late years, as a natural product from Peru, where it forms a stratum of some miles in extent. This salt is without smell or colour: it has a cooling saline taste, and deliquesces in a moist atmosphere. When Mr. Darwin visited Peru, in 1835, the price of the salt at the ship's side, was fourteen shillings the hundred-weight; a great item in its cost being due to the expense of transportation to the coast. It is mentioned by Dr. Danberry as a remarkable circumstance, that the nitrates of soda and of potash, whilst in some cases they have occasioned a wonderful increase of produce, in others have appeared of little service, and also that, whereas on certain land both were equally efficacious, on a different description of soil one has answered, while the other failed. The results of various experiments seem to show that where the constituents which a plant requires are all present in the soil, with the exception of nitrogen, then the addition of the nitric salt does good by supplying that gas, and thus enabling the vegetable to assimilate the other ingredients; but when these ingredients are already nearly exhausted, the nitrates will be no longer of use, as that portion of nitrogen only can be assimilated which is equivalent to the amount of the fixed ingredients. "The proper remedy in such a case," says the Professor, "would seem to be that of applying some other manure, which may furnish a due supply of the deficient matters. Thus, if the nitrates have failed, we should be inclined to try the

next year the effect of phosphate of lime, or of animal manure, upon the same soil."

It is evident that to an understanding of the most judicious employment of these substances as manure, much experience and accurate observation, together with a considerable share of chemical knowledge, is required. The ashes of vegetable substances which have been burnt in the open air contain a large portion of potass, with some fine earths, and are consequently very effective in stimulating vegetation on some lands. During this month the operation of paring the land, in order to burn the dry sods and use them as manure, is usually carried on. This is a quick and effectual method of bringing a surface covered with coarse herbage into a state of culture. Sometimes a compost is made of the pared surface with lime, or earthen walls are built up with the sods which by the action of the atmosphere become friable and fertile, but these are slower processes, and perhaps not more advantageous in their results than paring and burning.

Another employment for April is the rolling of grass-lands where they are in a fit state to allow of it. The season must be particularly attended to in this process, for when the surface is either decidedly dry or wet, it cannot be performed to advantage. The early spring months are the most common period, and the present one frequently affords a favourable opportunity in situations where the land is of a dry description. A moderate fall of rain in such cases merely softens the earth to the required degree, and thus proves advantageous to the subsequent process. In wet lands, on the contrary, a later month will be chosen, when the superabundant moisture shall have been exhaled, and the soil brought into proper condition to receive the animals employed in drawing the machine.

By the operation of rolling, the surface of the land is rendered more compact by the breaking of the heavy clods, or in the case of pastures, a smooth and level surface is obtained. In both cases the practice is found decidedly beneficial, and it is sometimes found equally useful with young crops in the early spring. A heavy roller is found necessary, and the horses are usually yoked double, that the ground may not be injured by their following each other in the same track. If a third should be necessary it is attached as leader in front of the other two. Water-meadows are frequently rolled as early as February or the beginning of March.

The barking of trees is another important operation of the present month; but as we intend to give a separate notice of oak-barking, it will not be necessary to enter into the particulars of this interesting employment. We may remark, however, that the earlier this work can be done in the spring the better. As soon as the sap begins to rise the bark will be easily detached from the wood, and it ought then to be removed without delay: it is even affirmed that if the whole of it could be taken off before the leaves are completely developed it would be much better, for that every ton of bark taken off as late as July is deficient at the rate of two hundred-weight a ton, compared with that taken in May, or early in June. Oak trees are peeled from the latter end of April to the middle of July. The birch and larch may be peeled a month earlier than the oak, but it is usual to leave the former of these trees until July, because there is an outer skin upon the bark which is of no use to the tanner, and which cannot so well be separated at any other time.

In some districts the bush-harrow is much employed on grass lands during this month. It is useful in dispersing roughness and decaying matter, and it is also occasionally used for covering grass and clover seeds. It is of simple construction, being formed of small rigid branches of spray, interwoven in a frame consisting of three or four cross bars fixed into two end-pieces, so as to leave the under part of the harrow very rough and bushy. Small wheels are sometimes attached to the two foremost extremities of the frame, but it is not uncommon to find them dispensed with, and the whole rough surface applied to and dragged on the ground.

INGENUITY OF A CHEROKEE INDIAN.

Sequoyah, a Cherokee Indian, instead of joining the rude sports of Indian boys, while a child, took great delight in exercising his ingenuity by various mechanical labours. He also assisted in the management of his mother's property, consisting of a farm, and cattle, and horses. In his intercourse with the whites, he became aware that they possessed an art, by which a name, impressed upon a hard substance, might be understood at a glance, by any one acquainted with the art. He requested an educated half-blood, named Charles Hicks, to write his name; which being done, he made a die, containing a fac-simile of the word, which he stamped upon all the articles fabricated by his mechanical ingenuity. From this he proceeded to the art of drawing, in which he made rapid progress, before he had an opportunity of seeing a picture or engraving. These accomplishments made the young man very popular among his associates, and particularly among the red ladies; but it was long before incessant adulation produced any evil effect upon his character. At length, however, he was prevailed upon to join his companions, and share in the carouse which had been supplied by his own industry. But he soon wearied of an idle and dissipated life, suddenly resolved to give up drinking, and learned the trade of a blacksmith by his own unaided efforts. In the year 1820, while on a visit to some friends in a Cherokee village, he listened to a conversation on the art of writing, which seems always to have been the subject of great curiosity among the Indians. Sequoyah remarked that he did not regard the art as so very extraordinary, and believed he could invent a plan by which the red man might do the same thing. The company were incredulous; but the matter had long been the subject of his reflections, and he had come to the conclusion, that letters represented words or ideas, and being always uniform, would always convey the same meaning. His first plan was to invent signs for words; but upon trial he was speedily satisfied that this would be too cumbrous and laborious; and he soon contrived the plan of an alphabet, which should represent sounds, each character standing for a syllable. He persevered in carrying out his invention, and attained his object by forming eighty-six characters.

While thus employed, he incurred the ridicule of his neighbours, and was entreated to desist by his friends. The invention, however, was completely successful, and the Cherokee dialect is now a written language; a result entirely due to the extraordinary genius of Sequoyah. After teaching many to read and write, he left the Cherokee nation in 1822, on a visit to Arkansas, and introduced the art among the Cherokees who had emigrated to that country; and after his return home, a correspondence was opened, in the Cherokee language, between the two branches of the nation. In the autumn of 1823, the general council bestowed on him a silver medal in honour of his genius, and as an expression of gratitude for his eminent public services. This extraordinary man is now with his countrymen west of the Mississippi.—*North American Review.*

We may remark, with reference to the above, that, as each letter of this alphabet represents one of eighty-six sounds, or which, in various transpositions, the language is composed, a Cherokee can read as soon as he has learned his alphabet. It is said that a clever boy may thus be taught to read in a single day.

When a man stands in no awe of the disgrace which attends bad actions, and has no concern for his character, there is no way of transgression in which that man may not walk. With a countenance clothed in shamelessness and audacity, he easily and naturally proceeds from one bad action to the most profligate attempts.—Procopius.

LONDON:
JOHN WILLIAM PARKER, WEST STRAND.
Published in Weekly Numbers, price One Penny, and in Monthly Parts, price Sixpence.
Sold by all Booksellers and Newsvenders in the Kingdom

THE

Saturday Magazine.

Nº 630. APRIL 30TH, 1842. { PRICE ONE PENNY.

FURNESS ABBEY, LANCASHIRE.

RUINS OF FURNESS ABBEY.

THIS abbey is situated in a valley called "Bekansgill," *i. e.*, the glen of the deadly nightshade, at a distance of about a mile from the town of Dalton in Lancashire. It is dedicated to St. Mary, and was founded on the nones of July, 1127, by a body of Cistercian monks, with Ewan the first abbot, at their head. The brotherhood were affiliated with the monastery of Savigni, and on their arrival in England, in 1124, they seated themselves in the centre of the county, in a monastic erection already established at Tulket near Preston. "The abbot, with the sagacious eye of a monk, fixed upon a site for the erection of his house where all the materials were at hand, and in a situation where the monastic authorities could reign monarchs of the district. Here stone, timber, iron, and lead all presented themselves in abundance; and the patronage of Stephen, earl of Bologne, afterwards king of England, furnished the means of erecting a sanctuary sufficiently stable almost to defy the corroding hand of time itself." Soon after the foundation of the monastery there arose between the monks and those of Waverley in Sussex, also of the Cistercian order, a contention for precedence, which for some time agitated the monastic world. It appears that Furness Abbey was founded a short time before Waverley, on which account the abbot of Furness laid claim to precedence; but Furness being a daughter of Savigni in France, derived its origin from the Benedictines. The fourth abbot of Savigni, in a general chapter surrendered his house, with all its dependencies, into the hands of Bernard, abbot of Clarevall, for the purpose of becoming Cistercian. Peter de York, the fourth abbot of Furness, with his convent appealed to Pope Eugenius the Third against this surrender, and going to Rome on this occasion, obtained from the pontiff a confirmation that the abbey of Furness should remain of its original order; but, on his return, he was seized by the monks of Savigni, obliged to resign his abbey, and become a monk there, bearing the Cistercian order. His successor at Furness, John de Canunsfield, to whom Eugenius the Third granted a bull of exemptions, reconciled this house to the mother church of Savigni, and thenceforth it became Cistercian. At last it was determined that the abbot of Furness should have precedence through all the houses of eleemosyna in England, but the abbot of Waverley was to have precedence in the chapters of abbots through England, with a superiority over the whole order.

In 1153, the estate of Fordeboc, or Fordbottle, a place of which no trace remains, was added to the possessions of the abbey by St. Michael le Fleming, who had previously exchanged with the monks, Ros and Crimleton, for Urswick. The limits of Furness Fells, on the Kendal side, were the occasion of a dispute, in the early part of the reign of Henry the Second, between the monks and William de Lancaster, baron of Kendal. This dispute was at last settled, by a reference to thirty sworn men and the agreement afterwards confirmed by the king. The charter of Stephen, which conveyed to the abbot immense estates, and by which he claimed almost regal power, was confirmed successively by Henry the First and Second, by Richard the First, John and Henry the Third. These charters enumerate the

fishery of Lancaster Staplethorpe, Furness forrest, the isle of Wagney with the Chase, Dalton, Wynterburne, Fordbottle, Crinelton, Rose, Berdesey, Neuby, and Sellesce, as possessions of the abbey of Furness. The abbot, by virtue of the foundation charter, claimed to have and exercise, among other privileges, sheriff's term, assize of bread and beer, wreck of the sea, weyf, infangmetheof and free chase in Dalton and some other places; to be free from county fines and amercements, and from county suits and wapentakes for himself and men in those towns; and to have a market, fair, and gallows in Dalton, and to make summons and attachments, by his bailiff in Furness. The power of this monastery was yet further extended by successive monarchs, until among its privileges may be mentioned the exemption of the abbot from personal appearance in any court of justice within the realm, with license to prosecute and defend all causes, in the courts within or without the county, by his attorneys appointed under the seal of the abbot and convent of Furness.

The serjeantry or stewardship of Furness was an important office, and was usually held by men of high rank. There is, in the Chapter House, Westminster, an autograph letter from Alexander Rawlinson, the abbot of Furness, to Cardinal Wolsey, announcing that the convent, according to his request, would grant the stewardship of the monastery to the earl of Derby, if they might have returned to them a grant "made and sealyd wyth our convent seale and delyuered vnto the late erle of Darby, by John Dalton Pertensid Abbot in the tyme of his intrusion." The letter is dated merely, "From Furnes, the xvjth day of July;" and it appears from it that the country was then suffering under the visitation of a pestilence. "I was comying," says the abbot, "towarde youre grace by the space of xl myles and more, whereas I had knowledge how the Terme was adiorned and the great Plage renyng, wherefore I retornyd to my monstry."

Through four centuries this religious house flourished, extending continually its revenues and its hospitality; and how much longer the monks might have kept their station, had not our eighth Henry and the pope come to issue about the divorce of Catherine of Arragon it is impossible to say. At the period of the dissolution, the abbey was endowed with a revenue of 805*l.* 16*s.* 5*d.* exclusive of the woods, meadows, pastures and fisheries, retained by the monks in their own hands; and of the shares of mines, mills, and salt works which belonged to the abbey. This wealth enabled the inhabitants of the monastery to exercise a princely hospitality, of which some remarkable instances have been preserved in the depositions taken in 1582, in the course of a dispute between the tenants of Low Furness, late holding under the abbot and convent, and John Brograve, Esq., attorney general of the duchy. One deponent, aged 78, said that he had many times seen the tenants resort to the monastery, on tunning days, sometimes with twenty, sometimes with thirty horses, and had delivered into every of them firkins or barrels of beer or ale, each containing ten or twelve gallons: and the same was worth 10*d.* or 12*d.* a barrel at that time. A dozen loaves of bread were delivered to every one that had a barrel of beer or ale, which bread and beer, or ale, was delivered weekly; and every dozen loaves was worth 6*d.* Another deponent had known divers children of the tenants and their servants to have come from the plough or other work into the said abbey, where they had dinner or supper; and the children of the said tenants came divers times to the said abbey; and were suffered to come to school and learning within the said monastery. This was confirmed by John Richardson, who said that there were both a grammar school and a song school in the monastery, which the children of the tenants that paid provisions, were free to come and resort; and that he was at the said school: and Richard Banks deposed that the tenants, their families and children, did weekly have and receive, at and out of the said monastery, of charity and devotion, over and besides the relief and commodities afore rehearsed, to the value of 40*s.* sterling.

The loss of so much power and wealth naturally excited the indignation of the brotherhood. After the appropriation of its funds to the use of the state, the abbey was abandoned, and the edifice which would have weathered the storms of a thousand winters, if supported by timely reparations, soon sunk into a state of dilapidation. "The magnitude of the abbey," says West, "may be known by the dimensions of the ruins; and enough is standing to show the style of the architecture, which breathes the plain simplicity of that taste which is found in most of the houses belonging to the Cistercians. The round and pointed arches occur in the doors and windows; and the fine clustered Gothic, and the heavy plain Saxon pillars stand contrasted. The walls show excellent masonry: they are in many places counter-arched, and the ruins discover a strong cement. The east window of the church has been noble; and some of the painted glass that once adorned it is preserved in a window in Windermere church. This window consists of seven partitions, in three of which are depicted, in full proportion, the crucifixion, with the Virgin Mary on the right, and the beloved disciple on the left of the cross. The rest of the window is filled up with other Scripture subjects, and the arms of several benefactors. On the outside of the window at the abbey, under an arched festoon, is the head of Stephen, the founder; and opposite to it that of Maud, his queen, both well executed. In the middle space, where the first barons of Kendal are interred, lies a procumbent figure of a man in armour, cross-legged. The chapter-house is the only building belonging to the abbey which is marked with any elegance of Gothic sculpture. The vaulted roof, formed of twelve ribbed arches, was supported by six pillars, in two rows, at fourteen feet distance from each other. This noble roof fell in about the middle of the eighteenth century; but the entrance, or porch, which exhibits a fine circular arch, beautified with a deep cornice, and a portico on each side, is still standing. The only entire roof of any apartment now remaining is that of a building within the inclosure-wall, which was the school-house of the abbot's tenants. There is a general disproportion prevailing here, as well as in the interior of all Gothic churches. The width is not suited to the height and length; but the most remarkable deformity in this edifice, and for which there is no apparent reason or necessity is, that the north door, which is the principal entrance, is not directly under, but on the west side of the window above it. The tower has been supported by four magnificent arches, of which only one remains entire: these arches rest upon four tall pillars, whereof three are finely clustered, but the fourth is of a plain unmeaning construction."

In magnitude this abbey was the second in England belonging to the Cistercian monks, and the next in opulence after Fountains, in Studly-park. The church and cloisters were encompassed by a wall, which commenced at the east side of the great northern door, and formed the straight enclosure; and a space of ground to the extent of sixty-five acres, luxuriantly wooded, was surrounded with a strong wall, which enclosed the mills, kilns, and fish-ponds belonging to the abbey, the ruins of which walls are still visible. This was the great enclosure, now called the Deer Park, in which terraces might be found commanding views equal, if not superior, to any in England. The beautiful rivulet to the north, which constantly runs through the valley, is conducted by the east end of the church, and by the side of the cloisters is an arched subterraneous passage or tunnel, and another temporary brook from the west has been conducted in a similar manner. Originally the

abbey was of such a magnitude as nearly to occupy the whole breadth of the glen; and the extreme length of the church was 304½ feet. The finest view of the ruin is on the east side, where, beyond the shattered frame that contained the richly-painted window, is seen a perspective of the choir, and of the distant arches of the nave, with the rich foliage of the stately woods to the west, closing the vista. The structure is built with the stone of the district, strongly tinged with iron ore, which imparts a sombre hue to the pile, and the climbing ivy, interspersed with tufts of moss, mixed with the towering nightshade, heightens the effect, and combines with the stately building, "great in decay," to carry the mind imperceptibly back to the ages of monastic dominion. The hand of decay is here continually at work, but, owing to the original strength of the erection, and to its seclusion from the busy haunts of men, the ruin will probably survive longer than the building stood in its pristine glory, when the abbot was monarch of Furness, and the abbey was the school and the tomb of successive generations of the most elevated portion of the inhabitants.

The foregoing particulars, which we have gathered from the excellent History of the County Palatine and Duchy of Lancaster, by Edward Baines, Esq., M.P., relate to the abbey up to the year 1774. The present appearance of these celebrated ruins is described by Mr. Edward Baines, Jun. He says,—

"I turned from the high road into a lane shaded with oaks, running down a narrow valley or glen, called 'the Glen of the deadly Nightshade,' and at the bottom of this glen, under the solemn shade of majestic forest trees, I came upon the ruins of the famous abbey of Furness. The first effect would be much more imposing if you did not approach through a farm-yard, and by a small manor-house; but beyond you obtain a full view of the venerable ruin itself, with a grassy area in front, and inclosed on each side by noble groves of the plane-tree, the ash, and the oak. The abbey, though much shattered, and having lost the central tower, is still extensive and magnificent. Lofty walls and arches, clustered columns, and long-drawn aisles remain; and the fine symmetry and noble proportions of the arches contrast most picturesquely with the rents and fractures of the pile.

"The former extent of the building may, in some degree, be judged of when I state that what remains measures five hundred feet from north to south, and three hundred from east to west. At the southern extremity of the abbey, the glen makes a very sudden bend just below the ruin, which gives it the appearance of a *cul de sac*, terminating in a concave sweep of the hill, which might have served for the seats of an ancient theatre. The abbey lies in a nook, apparently so secluded that it might be deemed the utmost corner of the earth, yet you have only to ascend the hills on either side, and you look abroad on the wide world, embracing all the extent of sea and land prospect visible from the shores of the bay of Morecambe. The college and the school-house are the most complete apartments remaining: the former has an arched roof still quite perfect; its tall narrow windows have no arch, but terminate upwards in the shape of a pediment. The school-house is equally perfect, but is smaller and less ornamental. From these apartments we proceeded over a space where scarcely a fragment remains, to the kitchens, and thence to the refectorium, which has been a very spacious hall, with a row of columns in the centre supporting the vaulted roof, and the walls counter-arched. A few years since, this hall was filled with earth and fragments as high as the capitals of the pillars on the walls; of course the pillars were concealed, the arches lost their effect, the walls appeared comparatively low, and nothing was known of the row of columns in the centre. The removal of the rubbish* has shown what the design and appearance of the hall have been. The proportions of the walls and arches were restored, and the basis of the central row of columns are all found, with considerable fragments of the columns themselves, which are placed in their proper situations. The chapter-house, the most sumptuous apartment in the building, is equally a gainer by the operations. The fretted roof, which fell about the middle of the last century, was supported by six deeply channelled columns in two rows, considerable fragments of which have been rescued, and piled up in their places. The capitals and keystones are richly carved, and the arches in the walls are beautifully proportioned. The porch of the chapter-house has been adorned with small marble columns, and at the entrance are Saxon arches, with very deep cornices. Two similar arches, but of smaller dimensions, lead from the cloisters to the refectorium. Passing through the cloisters, of which only the skeleton remains, we entered the church under the great central tower, the lofty arches of which are yet standing. The eastern window is of vast dimensions, and its ornamented frame was anciently filled with painted glass, some of which still exists in the church of Bowness. In the wall, at the right of the window, are four stalls, with a fretted canopy, where the priests sat at intervals, during the service of mass. The church forms the northern side of the building; but one of its walls, and both its rows of pillars are gone. Their bases, which remain, show that the pillars were alternately round and clustered. Four statues, of admirable workmanship, two of marble, and two of stone, are shown to the visitor; one is in chain armour, two others also in armour, and the fourth is a lady; they are in the recumbent posture, and have lain upon sepulchral monuments. Near the central tower are three chapels, with pavements of ornamented brickwork, and traces of altars. At the western end of the church is a winding staircase, still perfect, ascending to the top of the building, whence there is an interesting view of the ruin. The head of Stephen, the founder of the abbey, and that of Maud his queen, both crowned, are seen on the outside of the eastern window."

* By order of the late Earl of Burlington.

The Sundays of those who do not improve them to a good purpose will infallibly be perverted to a bad one. But it were still a melancholy account if we could regard them merely as standing for nothing, as a blank in the life of this class of the people. It is a deeply unhappy spectacle and reflection, to see a man, of perhaps more than seventy, sunk in the grossness and apathy of an almost total ignorance of all the most momentous subjects, and then to consider, that, since he came to an age of some natural capacity for the exercise of his mind, there have been more than three thousand Sundays. In their long succession they were *his time*. That is to say, he had the property in them which every man has in duration; they were present to him, he had them, he spent them.

Perhaps some compassionate friend may have been pleading in his behalf,—Alas! what opportunity, what time, has the poor mortal ever had? His lot has been to labour hard through the week throughout almost his whole life. Yes, we answer, but he has had three thousand Sundays; what would not even the most moderate improvement of so very large a sum of hours have done for him? But the ill-fated man, (perhaps rejoins the commiserating pleader,) grew up from his childhood in utter ignorance of any use he ought to make of time which his necessary employment would allow him to waste. There, we reply, you strike the mark, Sundays are of no value, nor bibles, nor the enlarged knowledge of the age, nor heaven, nor earth, to beings brought up in estrangement from all right discipline. And therefore we plead for the schemes and institutions which will not *let* human beings be thus brought up.—Foster.

Oh what a tangled web we weave
When first we practise to deceive!—Walter Scott.

EASY LESSONS IN CHESS.

III.

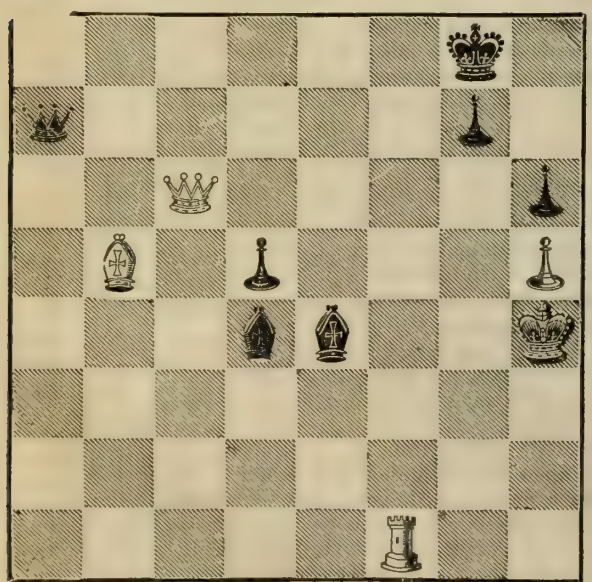
BEFORE we proceed to play our first game of chess, it will be necessary to explain a few of the technical terms which are in constant use among chess-players, as also the code of laws which regulates their proceedings.

The King is the principal character in the chess-field: his person is sacred, and he can never be captured; he is nevertheless liable to the attacks of your adversary's pieces, which must be instantly warded off, for if being under attack he is unable by any means to escape therefrom, he is said to be checkmated, and the game is at an end. The grand object of chess is therefore twofold, namely, to guard your own King from danger, while at the same time you form a systematic attack on your adversary's King.

Whenever you make a direct attack upon the King you must inform your adversary of the circumstance by calling out "check," and he must immediately attend to the warning and *escape from check*, or *get out of check*, by one of the three following methods:—1. By *moving* the King out of check; 2, By *capturing* the piece or Pawn which checks; 3, By *interposing* a piece or Pawn between the King and the checking piece; except in the case of a Knight, a check from which can only be parried by moving the King or capturing the Knight.

We will show the application of "check" and "checkmate" by means of a chess problem. We may first inform you that the moves at chess are played by each player alternately, and as we suppose you to play the white pieces we shall always give you the first move. Be careful, therefore, whenever a position or problem is given by way of illustration to notice the direction in which the Pawns are moving;—those of your adversary, *i.e.*, the black Pawns, always move towards you, while your own Pawns always move away from you. When you are directed to capture one of your adversary's pieces or Pawns you remove it from off the board, and place your own piece or Pawn on the square which it occupied.

The accompanying diagram represents the position of the pieces at the end of a game. The player of the white pieces having to move first, is able to check-mate his adversary in four moves.



Certain given positions or combinations of pieces of this kind are called PROBLEMS, many of which are remarkable for the great beauty and ingenuity of their solutions or answers. When you are a little further advanced we will occasionally give you a problem to solve, and you will find the exercise both pleasant and instructive.

In order to solve this problem you play your Rook to K. B. 8th sq., and call out "check." Now of the three methods of escaping check, Black can avail himself of two: he cannot interpose a piece, because your Rook checks his King on the very next square to that which he occupies: the Black King must therefore either take the Rook or move out of check. If he take the Rook you checkmate him instantly by playing your Q. to K. 8th, and he cannot take your Q. because she is *supported* by the B., for were he to capture her he would still be in check with the B., and the K. is in no case allowed to put himself in check. The King must therefore be moved out of check, and you will observe that there is only one square to which he can be played, and that is to his R. 2nd, which you know is the same as your K. R. 7th.——For your second move you play Q. to K. Kt. 6th, checking. Of the three modes of escaping check Black can avail himself of only one; he cannot interpose, and he cannot move on account of the position of your Rook: he must therefore take your Q.; but this he cannot do with his K. because your Q. is supported by the Pawn at your K. R. 5th; he must therefore take your Q. with his B. We may here mention that although your Q. is of far more value than the B. which you get in exchange for her, yet occasions sometimes arise when it is desirable to *sacrifice* a Queen or a Rook for one of the *minor pieces* (as the Bishops and Knights are called) or even for a Pawn.——Your third move is, P. takes B., checking, The Black King not being able to move out of check must take the Pawn. You now play for your fourth move K. B. to Q. 3rd, and thus give check-mate because the Black King is in check, and cannot move out of check.

The term "check" is used only when the King is placed in danger. The Queen, Rook, Bishop, Knight, and Pawn may all be *attacked* and captured, but we never say they are *checked*, except sometimes in the case of the Queen, when being attacked, the player calls out "check to the Queen:" but the practice, however courteous, is not to be recommended, since chess is a silent, calculating game, and we are not willing to impose a word more on the player than the laws of the game require. There are four kinds of "checks."—1. A *simple* check, that is, when the King is attacked only be piece which is moved. 2. *Check by discovery*, that is, when the piece which moves does not check, but unfolds another piece which does; for example,—let the Black King be at home; then place a White Rook on your K. R. 8th, and a White Knight on your K. Kt. 8th. In this position by playing your Kt. to your K. R. 6th, your R. checks the black K. by discovery. By playing your Kt. to K. B. 6th, instead of to K. R. 6th, we have the third species of check, namely, *the double check*, which combines the simple and the discovered check. The fourth description of check is the *perpetual check;* that is, when one player can check the other every move, and the check cannot be parried so as to prevent its repetition: then if the first player persist in giving check every move the game must be abandoned as drawn. For example,—place the Black K. on his R. sq.; Black B. at K. R. second sq., and Black Pawn at K. Kt. second sq.; then if your Q. be at K. R. fifth, and you play her backwards and forwards from this square to adv. K., checking, the only means the King has of escaping check is by playing the Bishop backwards and forwards from K. R. second square to K. Kt. square.

A drawn game is that which is won by neither party, and as a general rule a game is drawn when one player has not the means of check-mating the other.

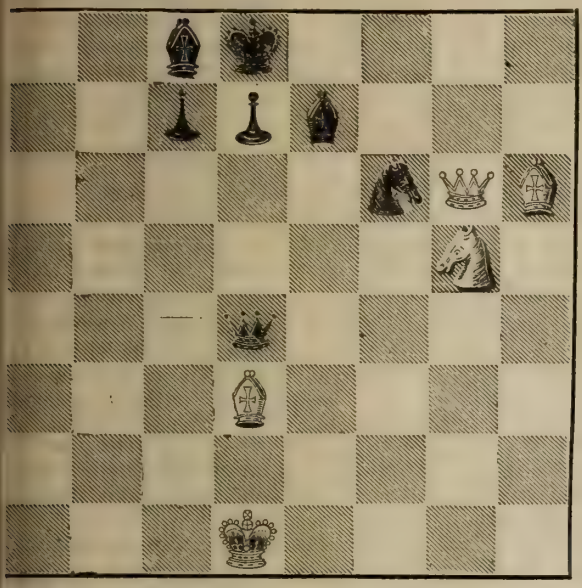
There are also several descriptions of mates. 1. The FOOL'S MATE, which can be given in two moves. The board being prepared for play we suppose you to open the game thus:

WHITE.	BLACK.
1. K. B. P. two squares.	1. K. P. one square.
2. K. Kt. P. two squares.	2. Q. to K. R. fifth square, checkmating.

The second kind of mate is called the SCHOLAR'S MATE, and is sometimes given to beginners in the game: it is accomplished thus:

WHITE.	BLACK.
1. K. P. two squares.	1. K. P. two squares.
2. K. B. to Q. B. fourth square.	2. K. B. to Q. B. fourth square.
3. Q. to K. R. fifth square.	3. Q. P. one square.
4. Q. takes K. B. P., checkmating.	

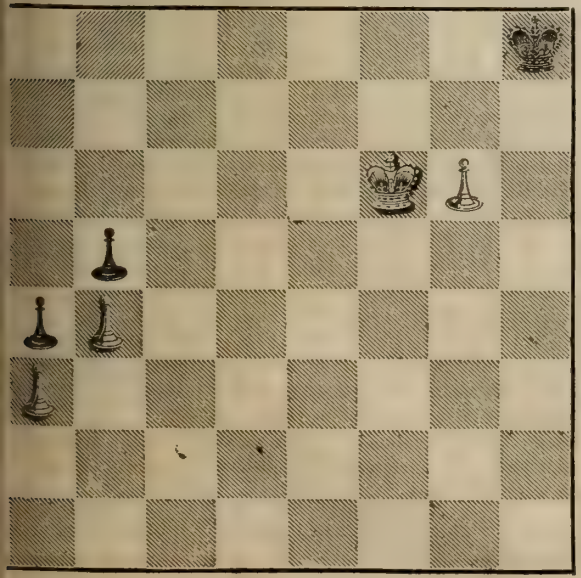
A third description of mate is called the SMOTHERED MATE and can only be given by the Knight. The following problem, in which white, moving first, is required to give checkmate in four moves, will illustrate this description of mate.



WHITE.	BLACK.
1. Kt. to K.B. 7th. square, checking.	1 K. to K. square.
2. Kt. to Q. sixth, checking and discovering check.	2. K. to Q. square.
3. Q. to adversary's K. square, checking.	3. Kt. takes Q.
4. Kt. to K.B. seventh, checkmating	

You may probably imagine that by playing for your first move Q. to adversary's K. square; the mate could be given in two moves instead of four, and so it could if he were to take your Q. with his Kt. He would not do this, but would take with his K., in which case the terms of the problem could not be complied with.

A fourth description of mate is that which you must beware of giving, viz. STALEMATE. This occurs when the K. not being actually in check, cannot move without moving into check, and you have no other piece or Pawn to move. For example: in this situation white

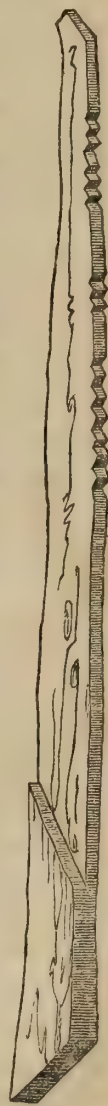


by playing his K. to K. B. 7th deprives his adversary of all power to move: the black King is not in check, and cannot move without getting into check: the further progress of the two black Pawns is prevented by the two white Pawns: therefore black is stalemated and the game is drawn:

Our lesson has now extended to some length. It contains a good deal which you ought to be well acquainted with; but you need not attempt to commit it all to memory: the constant use which will hereafter be made of many of the technical terms will fix them in your memory. You find yourself awkward at first in the use of the board and men, and especially in placing the men on the exact squares indicated. A little more practice, (patience you have already,) will make your chess exercises easy and pleasant, especially after the next lesson or two, when we shall begin to play a game; but we must first finish our notice of the technical terms and the laws of the game.

ON TALLIES.

THE destruction of the Houses of Parliament, in the year 1834, was the means of drawing the public attention to one of the singular usages of our ancestors, since abolished.—We allude to the use of *tallies* in the keeping of accounts. The conflagration which led to this national calamity, is believed to have been occasioned by the overheating of flues connected with a furnace or fire, in which a large number of *Exchequer tallies* were burned; the institution of a better and more modern mode of keeping the Exchequer accounts, having rendered these tallies of no further service. An Exchequer tally has thus become a record of former days; and an account of its nature and purpose may not be unacceptable.



A talley was a wooden rod or stick, split lengthwise into two portions, having notches of corresponding size and position on each portion. Suppose that, in ancient times, two persons had to transact commercial business, the one being a buyer and the other a seller: a piece of wood was taken, and notches cut in various parts of its length, indicating weight, number, size, or sums of money; this piece of wood being then so split down the middle as to allow each half to retain a portion of every notch, one person kept the one half, and the other the other, which thus served as memoranda and guarantees of the transaction. When another transaction took place between the parties, the debtor produced his notched half to the creditor, who fitted it accurately to his own, and added the requisite notches to those before made, taking care to make each notch across both halves of the stick.

As the most complete illustration of the use of tallies, we may describe the ancient mode of keeping Exchequer accounts. At a time when the Crown lands were very differently regulated from the present plan, the sovereign was a landlord who received his regular annual rents, which were paid either to the sheriff of the county in which the land was situated, or into the Exchequer at London. The Crown tenants were generally plain countrymen, who understood the rude but simple mechanism of the *tally* better than any system of writing; and also were in the habit of paying their rents partly in money, partly in corn, and partly in cloth. To accommodate the Exchequer arrangements to these usages, the following plan was adopted. One officer, called a *pésour*, was

employed to measure the corn or the cloth; and another called the *fusour*, received and valued the coin or the bullion proffered; but when the rents became paid wholly in money, another officer, called the *tallyer*, superseded the two former; and out of this office arose the modern Teller of the Exchequer.

When the tally system became in full operation, and money payments were made into the Exchequer, the *teller* or *tallyer* wrote out a bill, on which was entered the christian and surname of the payer, the date, and the amount of payment. This bill was immediately passed down through a pipe into the *tally court*, where it passed into other hands. The *cutter of the tallies* was an officer whose duty was to provide well-seasoned pieces of hazel, and cut them into neat four-sided sticks, of a convenient length. On receiving the bill from the *tallyer*, the *tally-cutter* selected a stick, and made an entry on it, corresponding with the terms of the bill. Certain conventional arrangements enabled him to effect this; such as cutting a broad notch to signify 1,000*l.*, a narrow one for 100*l.*, a still smaller for 10*l.*, slanting notches for the odd pounds under 10*l.*, a mere scratch for shillings, and holes for pence; these were all cut so as to extend entirely across one side of the piece of wood. This being done, the *tally-cutter* wrapped the bill around the stick, and handed both to the "scriptor talliorum," or *tally-writer*, an officer afterwards designated the auditor of the receipt. The *tally-writer* wrote upon two opposite sides of the wood a duplicate copy of the bill; and then read this inscription whilst another functionary, the *clerk of the pells* entered the same in a book. The stick was then passed to the *chamberlain*, who slit it into two, each of which contained entries and notches exactly similar to those on the other. One half called the *tally*, was then given to the person who had paid the money; while the other, called the *counter-tally*, was placed upon a string and carefully preserved in a large chest in the *tally-court*. If the same person afterwards came to pay in more money, he produced his tally, and the counter-tally was taken from its string. The tally and the counter-tally were fitted accurately together, to see that they corresponded; and the requisite entries were made in both. Upon every transaction of this kind, fees were paid to all the chief officers of the Exchequer.

There are many notices of the tally-system, scattered through the early writers; and indeed something similar has been in use in most countries. Among the Romans, a piece of wood or of metal, called a *symbolum*, was broken into two parts, and given one to each of two contractors to a bargain. The ancient Danes adopted a somewhat similar custom. When William of Normandy conquered England, he imposed a tax on his new subjects, which probably from being recorded on tallies, was called a *tallage*. William's immediate successors adopted a similar mode of raising money, often imposing a tallage on different towns, at pleasure; and the tax was assessed by the itinerant justices, who sometimes imposed it in gross upon a town, to be collected by the burgesses themselves, or else taxed the inhabitants individually. In case of excessive assessment, an appeal was made to the Barons of the Exchequer.

It is well known that the issue of Exchequer bills is the principal mode of contracting a state-debt at the present day; but in former times *tallies* were the awkward representatives of these bills. Exchequer bills have indeed, something of the character of the written counter tallies which were introduced by Edward the First. Edward the Third was enabled to carry on his laws by his wars by loans raised in this way; it has been said that he "collected money, *i. e.*, wool to sell for it, from all England by hazel tallies and short writings." There was an occurrence about the same time, and recorded by one of our early chroniclers, which shows that the barons of the Exchequer had the power to issue the necessary orders when a tally was lost, broken, or erroneously marked. William de Boxhore had received of John de Escudemor, 60*s.*, which he was to pay to the Exchequer, and with it a tally, upon which Escudemor had before paid in five marks. Boxhore converted the 60*s.* to his own use, and wrote it upon the tally as if paid in. The fraud was discovered, and Boxhore, who was an attorney of the King's Bench, was committed to prison for a year, and was afterwards further imprisoned at the king's pleasure. It was also decreed, that as Boxhore had damaged the tally by writing counterfeit entries thereon, he should give restitution to Escudemor for the 60*s.*, the five marks, and the tally.

At a later period we meet with a letter, written about the reign of Henry the Sixth, which indicates a custom of transfer of tallies, similar in principle to the transfer of stock in our own day. When a loan was made to the sovereign, he gave a tally for the amount, and this tally became a negotiable document. Sir John Fastolf having intrusted such a tally as this to his cousin Fenn, wrote as follows to his friend John Paston for advice:—"Worshipful Sir and Cousin; I recommend me to you, and like you to weet (wish you to know) that I have a tally with my cousin Fenn of 500 marks (333*l.* 6*s.* 8*d.*) and more, for to be changed upon such places as a man might have most speedy payment, and I pray you heartily to commune with the said Fenn, that I might be insured of the said tally to be exchanged, and for what reward competent to be given upon the same, I will (should) agree to it." Here it is plain that Fastolf wished to dispose of his tally, and he seeks for information as to where a good customer might be found, and what amount of discount would be expected off the expressed value of the tally.

In one of the daily papers, published about the time of the conflagration of the Houses of Parliament, are the following remarks on the gradual changes effected in the mode of keeping the Exchequer accounts:—

Tallies of the Exchequer, as instruments of loan, declined with the growth of Exchequer bills; and as implements of account they are now disused. By the statute 23 Geo. III., c. 82, (1783,) indented check receipts were to be issued from the tally-count instead of tallies, and after the expiration of existing interests the offices of the chamberlains, nominally the tally-joiners, with the offices of the tally-cutters, were to be abolished, the displaced officers retired with compensations, and their functions were transferred to other officers of the court. The chamberlains, in conjunction with the auditor, had the charge of the two most ancient and most used records of the kingdom, namely, the *Domesday Book* of the Conqueror, and a manuscript volume of much celebrity among antiquaries, and of real importance in the office of the Exchequer, called the *Black Book of the Receipt*, written by Richard, bishop of London, who served in the office of the Treasury for his father, Nigel, bishop of Ely, treasurer to King Henry I. To the same keeping of the chamberlains was likewise committed the disused ancient seal of the Court of Receipt, and the royal wills, contracts of marriage, and other deeds relating personally to the sovereign and his family, with original leagues, treaties, and negotiations, and other national documents, now deposited in the State-paper Office. In early times, the extinction of those officers as tally-joiners, and the death of the last of the old tally-cutters in 1804, presaged the extinction of tally-making.

The whole working machinery of the Exchequer was changed a few years ago, by the institution of the office of Comptroller of the Exchequer; the auditor, chamberlains, clerk of the Rolls, tellers, examiners, &c., being superseded by other arrangements, in which the Bank of England takes a part. The old tallies, accumulated to a large number, were lying as lumber in one of the apartments of the Exchequer; and the burning of these by order of the Board of Works, led accidentally to the destruction of the Houses of the Legislature.

Our cut represents one of the old Exchequer tallies with the notch or groove to which the counter-tally was attached.

THE BRANDY PEST.

No. VII.

The Surprise.

When Fridolin Walter had finished his narrative, which was of the highest interest to me, I thanked him heartily. "You have indeed done great and good things," said I, "and if possible I will be your imitator. The consciousness of having performed such a work must be a great satisfaction to you. Oh! how will Justine admire and bless you when I relate it to her on my return home!"

At these words, which in the warmth of my feelings I spoke unreflectingly, the good Fridolin grew pale. He stared at me and stammered:—"What?—at home?—who? you said Justine Thaly?"

"Forgive me, dear Fridolin," said I, taking his hand, "a name unguardedly escaped from my lips which ought not to have been uttered at present. Yet I came here for Justine's sake, although she knows nothing about it. Compose yourself; I have observed that your mother and yourself dislike to hear the name of Justine."

"No, no!" cried Fridolin, "Speak, speak! Justine in your house! Who says that I dislike the name of the poor girl? Has not my heart been bleeding these long years for the unfortunate girl? Would not my excellent mother sacrifice herself to make me happy with Justine, if she is still living? Speak, then; you know her—she lives with you—how is it possible? Is she worthy of your esteem?"

Fridolin would have certainly addressed to me a few hundreds of questions, if I had not interrupted him. "Compose yourself," said I, "Justine is worthy of your esteem and mine. Justine is with me."

Here Fridolin, in whose face joy and surprise were plainly depicted, started hastily up from his chair, and said, "With you? and you concealed it from me? Is she still at the inn? I must go and tell it to my mother. Oh, how could you be so cruel as to conceal this?"

"Listen! compose yourself!" cried I, "there is a misunderstanding between us. She is not with me here in this village; she is with my wife and daughter in my house, sixty miles from this place. She knows nothing about my being here." This explanation apparently satisfied him; but he sunk back in his chair, and said with a sad face, "How has she lived all this time? How came the unfortunate girl into your house?"

I related to him where and when we had found Justine, and how we had taken her with us. I gave him the most minute detail of all the circumstances; nevertheless, my narration appeared to Fridolin incomplete, and too short. He eagerly questioned me, every now and then, until I told him abruptly that I knew nothing more, and if he wished to know further, he must go with me and personally ask his once-beloved one.

"Once beloved!" sighed Fridolin. "Yes, in the abundance of her delicacy, she made me unhappy, and sent the ring back to my mother. But I must know whether she will doom herself and me to everlasting sorrow! I'll go with you; I must see. Our fate must be decided."

Fridolin seized my hand, and conducted me to his worthy mother. Then I was obliged to relate again all the details, and if possible more. The good lady listened to me with astonishment, looked at me with eyes sparkling with joy, and embraced her son, who wept aloud on her breast.

Some hours passed before the good people recovered from their astonishment, and could deliberate with me upon the necessary steps. Justine could not see her once and still beloved friend without being prepared for it, on account of her weak health. I therefore wrote to my wife in what disposition I found Dr. Walter, and that I would leave to her own judgment the breaking our arrival to Justine.

The Orphans of Suicides.

I confess that I trembled when the moment arrived in which Justine should again meet Fridolin after so long a separation. I did not even lose my fears when my wife assured me, on reaching home, that Justine was perfectly prepared to receive her friend. My daughter ran to Justine to announce our arrival; and after a few minutes, both girls appeared in the room where we were assembled.

A dreadful paleness covered Justine's beautiful face. She approached with a firm step to greet *me* first. Silently she gave me her cold hand as a welcome, whilst a transient smile hovered over her pallid face, like the smile which sometimes remains on the features of a corpse. She then looked on Fridolin, and made an obeisance to him, but with coldness and indifference, as if she were dead to him, and to all earthly circumstances. He approached the ghost-like figure with visible perturbation, lifted her hand to his lips, and said,—"My dear Justine, why do you look upon me so coldly? Heaven be praised that your are given back to me and my mother, who will now be your mother! You are mine for ever: nothing shall again separate us from each other. Look more cheerfully upon me. Am I not your dear Fridolin?"

The maiden opened her lips several times, without being able to speak, until at last she uttered, with a scarcely audible voice, the following words, whilst her features grew more and more lively: "Fridolin! dear, dear Fridolin! it is you! I *was* your betrothed bride; but can be so no longer; I am loaded with sorrow and shame! I should be a bad wedding gift! I cannot be yours! I cannot entail upon you the dishonour which bears me down! Fridolin, you can never forget that *I am the daughter of a suicide.* People will point at me with their fingers—I must not dishonour you. I cannot be yours! Farewell!"

She was going to leave the room; but Fridolin taking her by the hand, exclaimed, "Daughter of such a father, be not ashamed of me. My father, too, has committed suicide. Our lots are equal—tear not your fate from mine!"

Justine laid her hands upon her face, and fell sobbing upon his breast, whilst he clasped her in his arms. I gave a sign to my wife and daughter, and we left them alone.

The Marriage.

The scene we had just witnessed made a strong impression upon us. Each of us refrained from uttering a single word about it, and the afternoon, therefore, was occupied by melancholy reflections. Neither of our guests appeared, and we would not interrupt their conversation. But when evening came and the supper was on the table, I could not help feeling anxiety, and ringing the bell, ordered my daughter to go into the room where we had left Justine and Fridolin. More than half an hour passed, and nobody appeared. My anxiety increased. I feared an accident, and was about to go thither myself, when the door opened, and —what a satisfaction to me—Fridolin, with a face brightened by happiness, and Justine, blushing, with eyes cast down to the ground, entered, arm in arm.

"See, what a change has taken place," cried my daughter, laughing. Fridolin pointed to Justine, and said, "She is mine again—death alone can part us now!" "Let me be your father," cried I, turning to Justine, "and accept my blessing." "And I will be your mother," added my wife, pressing the happy girl to her breast.

I cannot, however, describe this solemn, but happy evening. The reader must imagine what a variety of feelings agitated the breasts of all. I am now at the close of one of the most remarkable incidents of my life, yet I cannot help giving some description of the wedding of the happy pair. I confess that I have never seen more splendid nuptials; for they cost Fridolin Walter more than fifteen hundred pounds. You are astonished: listen to my narrative.

Fridolin having remained several days with us, took his departure, in order to announce his happiness to his mother, and to make preparations for the marriage. After an absence of five weeks, he returned to fetch Justine and my daughter. My wife had, in the mean time, prepared the nuptial ornaments; but her pleasure was destroyed when Justine told her that Walter insisted upon choosing them himself. My wife and myself were, of course, invited to the ceremonial, and were received by Walter's mother with the greatest affection.

The morning of the wedding-day had arrived, and, excepting Justine, we were all assembled in our finest dresses at the breakfast-table. She had refused the assistance of my daughter in dressing: but what was our surprise when at last she entered the room! With the exception of a wreath of flowers in her golden hair, and a veil, she wore the same plain garments in which Fridolin had found her in my house. Her beauty was her only ornament.

"The garment in which she became mine is a holy garment," said Fridolin; "I could not choose a more precious one for her to appear in at the altar."

After many embraces, and amidst merry conversation, we sat down to breakfast. But suddenly our conversation stopped. A covered dish, with a wreath of flowers upon it, was brought in, and placed before Justine's seat. The ladies fixed their eyes upon it with impatient curiosity.

"A small bridal gift for my Justine," said Fridolin.

She smilingly took the wreath and uncovered the dish, when we were all disappointed in our expectation. Nobody doubted but that they would see a selection of splendid jewels. Instead of this some old papers appeared. Justine, who looked equally disappointed, unfolded them, read them, and grew earnest and pale. Tears rushed into her eyes,—she started from her seat, and threw herself, weeping and speechless, on Fridolin's breast, who for some time tried in vain to appease the storm he had excited. When Justine was recomposed, we were apprised of the value of the gift, which was not a small one, for it consisted of receipts for all the debts which her father had left unpaid.

Agitated almost as much as Justine, I could not help embracing Fridolin, and exclaimed,—"You could not have commenced your new career in life more splendidly than you have done this day!"

Yet this was not the whole gift with which Fridolin sanctified his nuptials. The evening before, I had remarked a quantity of poor persons entering the house, and leaving it with large bundles under their arms. He wished, I supposed, to make his wedding-day a festival for others,—and I was not mistaken. Justine confessed to me, that he had generously given away more than two hundred pounds in order to clothe twenty of the poorest families in the village from head to foot, and to provide them with linen and sheets.

"But this is royal prodigality, Fridolin," said I, when we went to dinner after the wedding.

The banquet was prepared in a large field, where four long tables formed a square, in the midst of which was another table covered for twenty persons.

"Have you invited the whole village to your wedding-dinner? Too much is too much, my dear friend."

He laughed and said,—"I am not rich, but I lose only a few useless jewels which I received in England from various persons. I sold them, and likewise the costly ornaments which Lord N———, my patron, sent last week for my bride. She had not even seen the diamonds and pearls, and she found her property in the paid bills of her father. I informed her of all this on our leaving the church, that she might not think me more generous than I am. As for these long tables, I have by no means invited the whole village, not even its most respectable families; indeed you will not find yourselves in splendid society. The poorest families who have given up brandy-drinking, and have entered our Temperance Society, will share our pleasure. The table in the midst is for us and the first founders of our Society."

I pressed the hand of the noble young man, and was only able to say,—"You have made clothes for the poor out of stones, and changed your pearls into tears of joy; but you have kept for yourself the most enviable jewel,—it is preserved in your own heart!"

The bride and bridegroom now took the places of honour. When we were all seated, music saluted us from the midst of the crowd of lookers-on. The seats in the great square were filled with the invited poor families. However, on this day they did not look poor; they all came in their new clothes, and happiness shone upon their faces. There was amongst the hundred guests, and the thousand spectators, a remarkable quietness and dignity, which is seldom found on such occasions. Was it the unusual spectacle, or admiration and respect for the bridal pair, and the recollection of their former unhappy days, which produced such an effect upon the hearts of the people? Even the merry music seemed to produce a certain melancholy joy, especially on the faces of Fridolin and Justine.

Conclusion.

Towards the end of the dinner, the conversation of the numerous guests became more lively. After a short time the clergyman, one of the founders of the Temperance Society, rose upon a form, and spoke as follows:—

"Dearest friends! Perhaps you expect me to give a toast, as is usual in our country on such an occasion, and to speak in praise of the virtuous pair to whom we owe this day of joy; but such public praise would rather annoy than gratify them. A toast is a mere compliment soon forgotten. You feel in your own hearts all the benefits which our generous Dr. Walter has given for the blessing of our parish, and it needs no words to express these feelings. This noble young man, whom we call father and benefactor, has saved hundreds of mankind from that horrible plague—the brandy pest!—which is worse than the cholera or the influenza. You know its consequences: it consumes the powers of life and of fortune, the talents of individuals, high or low, of whole families, of whole nations! It is controlled neither by schools, nor churches, nor apothecaries' shops, nor laws,—neither by prisons, nor workhouses, nor houses of correction; it proceeds from house to house, from the father to the son, from one friend to another. There is an old saying,—That no poison is more effective than that which is given with the mother's milk; and this is a true saying for the brandy pest. No corruption is more incurable than that which enters families, and is allowed, nay, even encouraged, by the females. People begin drinking in order to banish melancholy, or for other excitement; they drink afterwards every day, until the unnerved body sinks, and mind and heart succumb. Verily, he who seduces his neighbour to an immoderate use of wine, or accustoms him to brandy-drinking, is in my eyes, one of the greatest criminals. He employs the weapon through which virtuous men and innocent children fall; he throws unhappy wives into the grave, and poor orphans out of doors. The effects of this brandy pest in our village were so bad, that I despaired seeing them removed, until our good Fridolin Walter came over from England, and showed us the way of curing the evil. 'In the common danger of a country,' said he, 'no king, no legislation, no army can alone succeed. The whole nation will stand up for its liberty, if there is still virtue and patriotism in it.' Fridolin established the Temperance Society,—and through it, the peace of the families, the friendship of the inhabitants, and the welfare of the whole village, were re-established.

"Dear friends! I have lived amongst you many years. I have announced to you the Divine Word with indefatigable zeal; but I perceived with horror, that of late religion, the true and real spirit of Christianity, was fast declining. I observed, certainly, some emotions of devotion amongst my flock, but they passed away as soon as the church-service was over. The hour in the temple of the Lord had been lost, and God's commands disregarded. This, at times, entirely depressed my courage. I did not know whether mankind now-a-days was more corrupt than in former times, or whether I possessed not sufficient strength and energy for performing my holy task. But I now know the cause of so much irreligion and immorality,—it was the brandy pest! To the noble and generous Fridolin Walter we are at length indebted for the greatest benefit that could be bestowed upon our parish. How can we reward our benefactor? Dear friends! raise your looks up to heaven, and let every look become a silent prayer to God, that he may bless our benefactor as he has blessed us; that he may preserve him and the companion of his life for the benefit of us and of our children!"

The good parson was silent for a moment. His eye was turned to heaven. On his eyelids hung a tear. I saw before me along the tables, folded hands, faces turned towards heaven, and streaming eyes.

After a long pause, an indistinct noise arose amongst the guests and spectators, which became louder and louder, and only a few words were audible, such as,—"Yes, long! long! eternal life to Fridolin!—Long, heavenly Father! preserve him and her for us and our children!"

When the noise had subsided, the parson again rose. "Dear friends!" said he, "here, under the blue sky, let us promise to keep our vows, to banish from our homes him who attempts to introduce again brandy-drinking into our peaceful habitations! And you, generous Fridolin Walter, receive the finest gift we can offer you,—the grateful feelings of our hearts!"

At these words the old man sprang, with the quickness of youth, down from his place, and fell in Fridolin's arms. The others, who stood near him, deeply affected, followed his example. All the people rose from their seats, expressing their gratitude and joy.

I saw Justine surrounded by grateful girls and women, who kissed her hand with tears in their eyes. What a satisfaction for her, after having endured so many years of disgrace! And the good Fridolin, he was lost in the confusion of the surrounding crowd; everybody wished to see him, to speak to him a word of love.

It was late in the evening when he reached his home, where his young bride and his excellent mother received him with new delight and proud ecstasy.

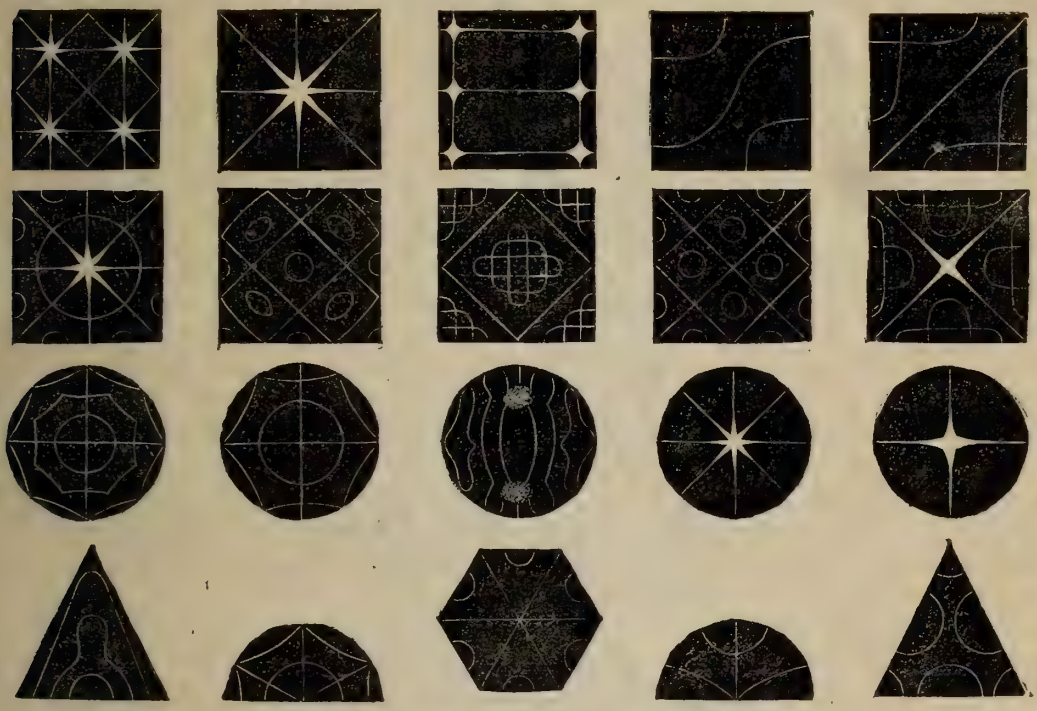
LONDON:
JOHN WILLIAM PARKER, WEST STRAND.
Published in Weekly Numbers, price One Penny, and in Monthly Parts, price Sixpence.
Sold by all Booksellers and Newsvenders in the Kingdom.

THE

Saturday Magazine.

No. 631. SUPPLEMENT, APRIL, 1842. Price One Penny.

THE PHILOSOPHY OF THE EXTERNAL SENSES. II.



EXAMPLES OF FIGURES PRODUCED BY VIBRATING SURFACES.

ON THE NATURE AND SOURCES OF SOUND.

Nature inanimate employs sweet sounds,
But animated Nature sweeter still,
To soothe and satisfy the human ear.—Cowper.

Introduction.

"If the atmosphere be considered as a vast machine, it is difficult to form any just conception of the profound skill and comprehensiveness of design which it displays. It diffuses and tempers the heat of different climates; for this purpose it performs a circulation, occupying the whole range from the pole to the equator, and while it is doing this, it executes many smaller circuits between the sea and the land. At the same time, it is the means of forming clouds and rain, and for this purpose, a perpetual circulation of the watery part of the atmosphere goes on between its lower and upper regions. Besides this complication of circuits, it exercises a more irregular agency, in the occasional winds which blow from all quarters, tending perpetually to restore the equilibrium of heat and moisture. But this incessant and multiplied activity discharges only a part of the functions of the air. It is, moreover, the most important and universal material of the growth and sustenance of plants and animals, and is for this purpose everywhere present and almost uniform in its quantity. With all its local motion, it has also the office of a medium of communication between intelligent creatures, which office it performs by another set of motions, entirely different both from the circulation and the occasional movements already mentioned; these different kinds of motions not interfering materially with each other; and this last purpose, so remote from the others in its nature, it answers in a manner so perfect and so easy, that we cannot imagine that the object could have been more completely attained, if this had been the sole purpose for which the atmosphere had been created. With all these qualities, this extraordinary part of our terrestrial system is scarcely ever in the way: and when we have occasion to do so, we put forth our hand and push it aside without being aware of its being near us."—Whewell, *Bridgewater Treatise.*

The above eloquent passage forcibly reminds us that a large amount of knowledge is necessary to a due appreciation of the many blessings we enjoy from the constitution of the physical world, maintained as it is so constantly by an Almighty hand. Health, and strength, and reason, are indeed precious gifts vouchsafed to the majority of mankind, and these are sufficient to impress us with gratitude: but when by a careful examination of our earthly dwelling-place, we see the thousands of wise and beautiful adaptations whereby the world has been prepared for living creatures, or they for the world, we feel how natural was the exclamation of the inspired Psalmist, "Lord, what is man that thou regardest him, or the son of man that thou visitest him."

If we attend but to one of those minor offices of the air—the production and propagation of certain pulses which, falling upon the ear, produce sound,—abundant material may be offered for instruction and admiration. How many delightful associations do we connect with sound! how many of the beauties and the sublimities of nature! how much of the business and the pleasures of social life! The murmuring of waters, the whispering of winds, the sweeping of the blast through the forest, the rush of the cataract, the roaring of ocean and the voice of the thunder,—these are a few of the distinctive characters of different objects which the atmosphere presents to us in so perfect a manner that we can distinguish any one of them amid a multiplicity of minor sounds. And then, how beautiful is that combination which makes up many a rural concert! the woodman's axe, the lowing of cattle, the cawing of rooks, the hum of insects, the distant village bells, the evening song of the thrush, the bleating of sheep, sounds apparently unconnected, and some of them inharmonious, yet, taken with their poetical

associations, can scarcely be heard without emotion. But "the articulate character of sounds is for us one of the most important arrangements which exist in the world; for it is by this, that sounds become the interpreters of thought, will, and feeling, the means by which a person can convey his wants, his instructions, his promises, his kindness, to others: by which one man can regulate the actions and influence the convictions and judgments of another. It is in virtue of the possibility of shaping air into words, that the imperceptible vibrations which a man produces in the atmosphere become some of his most important actions, the foundations of the highest moral and social relations, and the condition and instrument of all the advancement and improvement of which he is susceptible."

Section I. On the Nature of Sound.

If we listen to a sound, and at the same time observe the cause which produces it, it will be remarked that the cause has ceased to act before the sound has reached our ear. When, for example, a gun is fired, the flash is seen before the report is heard, that is, provided the observer be at the distance of 40 or 50 yards from the gun; for at a less distance the flash and the report seem to occur simultaneously. In proportion as the distance is increased, the interval between the two is more marked. A similar result is obtained during a thunder-storm: the lightning's flash is seen before the thunder is heard, and the time which elapses between the two gives a measure of the distance between us and the thunder cloud. A number of persons placed on the same line, at the distance of one hundred yards from each other, would not at the same instant hear a sudden sound, such as an explosion, produced at one of the extremities of this line: the first person would hear the sound before the second, the second would hear it before the third, the third before the fourth, and so on; and it is important to remark, that at the moment when the third person, for example, heard the sound, the first and the second would have ceased to hear it, while the fourth and those beyond him would not yet have heard it. It appears then that an abrupt sound, such as an explosion, travels successively from one place to another; that it is heard in one place only at the same instant, and consequently that it must be a rapid motion capable of affecting our organ of hearing.

The invention of the air-pump enabled natural philosophers to explain many phenomena which had hitherto been involved in some degree of mystery; among which was the following:—In the year 1705 Hauksbee contrived an apparatus by means of which a bell might be rung in the receiver of an air-pump. On removing a portion of the air from the receiver, the sound of the bell was perceptibly diminished, and became feeble in proportion as the air was removed. A curious objection occurred to him respecting the results of this experiment:—"Whether the sonorous body in such a medium might not so suffer, or undergo such a change in its parts, as to be rendered incapable of being put into such a motion as is requisite for the action or production of sound?" He therefore instituted another experiment. A strong receiver, inclosing a large bell, was firmly screwed to the table of the air-pump: this was inclosed within another receiver, and the air between the two removed. On causing the inclosed bell to vibrate, no sound was heard, although the bell itself was surrounded by air; the existence of a vacuum between the two receivers as completely prevented the transmission of sound as if the bell itself were in vacuo. It will be seen therefore that sound cannot be propagated from empty space; for although the sound-producing body, under such circumstances, is thrown into a vibratory state, yet there is no path to convey these vibrations to the ear, and consequently there is no sound.

Sounds excited in the atmosphere diminish in intensity as they are elevated, not only because the distance from which we hear them is increased, but also because the air becomes more and more thin, or rarefied, in ascending from the surface of the earth, and at the height of about forty-five miles, at which the atmosphere most probably ceases to exist, and where is placed the boundary line between the air and the wide fields of space, sound also must cease. Thus the most violent terrestrial noises cannot escape the limits of the atmosphere: they become weaker and weaker as they ascend, and are soon altogether extinguished. So also no sound can reach this earth from the regions of space. The light of many a meteor may strike the eye, and we may in some measure be aware of terrific volcanic eruptions in the moon, but they are incapable of affecting our planet, because between us and them the Almighty has indeed fixed a great gulf, over which it is impossible to pass.

We need not ascend far from the earth's surface to become painfully aware of the thinness of the air, and the diminished intensity of sounds. On the summit of Mont Blanc a pistol produces less noise than would a small cracker in the valley below, and at great heights in balloons the sound of the voice of the aeronauts is scarcely appreciable.

The experiments which our countryman, Hauksbee, had the honour first to perform, are very valuable, and still retain their place in the science of sound; but they led him to an incautious conclusion. Speaking of his last experiment, he says that it "plainly shows, and seems positively to confirm, that air is the only medium for the propagation of sound." Now it was soon discovered that all elastic fluids, and even solids, and indeed all substances to which we generally apply the term elastic, were capable of transmitting sounds, more or less perfectly according to their varying degrees of elasticity. The air-pump furnishes the means for producing sound in various gases and vapours, by first pumping out the air from any convenient vessel in which a bell is suspended, and then allowing a gas to flow in to occupy the place of the air; or a liquid, such as ether, which the moment it falls into vacuo is converted into vapour, and fills the whole of the vessel. If the bell be rung in these various media the sound is always produced, accompanied, however, by many curious modifications which we cannot here consider.

Water transmits sound with great facility. A diver can hear words spoken above water, and those above water can hear the sound produced by the diver when he strikes two pebbles together.

That solids transmit sound may be familiar to most persons who have performed the curious experiment with a long piece of wood, such as a felled tree by the road side. If one person place his ear close to one extremity of the tree, he will hear distinctly, even so slight a sound as that produced by another person scratching the other extremity with his finger nail, a sound so faint as not to be heard even by himself.

Sound therefore may be considered as a very complex phenomenon, in which no less than six distinct processes seem to be necessary. 1st, the excitement of a motion in the sounding body; 2nd, the communication of this motion to the air, or other substance placed between the sounding body and our ears; 3rd, the propagation of such motion from particle to particle of the air, or other intermediate body, in due succession; 4th, its communication from the particles of the air, or other intermediate body, adjacent to the ear, to the ear itself; 5th, its conveyance in the ear, by a certain mechanism which we have already described, to the auditory nerves; 6th, the excitement of sensation. Sound therefore must be considered as a *sensation* within us, and nothing but a series of *motions* exterior to us. The ear is therefore as necessary to sound as are the vibrations of matter. Without the ear there is probably no such thing as sound in nature—the mighty Niagara has no voice of thunder when no ear is present to participate in the disturbance it excites—the ocean lashing the shingles on the beach—the artillery of the sky, and the fearful blast of the tempest, these have all their peculiar expressions for us, because we participate in the stupendous motions they produce in the air, and in surrounding matter; but in the absence of the animal ear, they consist of motions merely, not sounds. They are the beginnings of perceptions, but not the perceptions themselves, in the same way we may consider perception to be necessary to sensation, but altogether distinct from it.

The most accurate experiments which have yet been made render it probable, that when a body performs about sixteen vibrations in a second the lowest musical note is produced which can in general be appreciated. We must distinguish between *musical* sounds and *noises*, because our means of ascertaining what rapidity of vibration produces a noise or mere sound are uncertain. Musical tones can be compared with some fixed standard, and the number of vibrations within a given time calculated with ease and certainty; whereas a noise is due to impulses so irregular that it cannot be brought in unison with a musical note, and therefore its value cannot be calculated.

Every continued sound is composed of frequently recurring vibrations, from sixteen up to many thousand, during a second of time. The effect on the ear, for any given

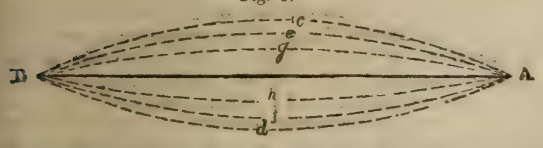
number of vibrations between these limits, is that of one sustained sound, and the ear is incapable of resolving it into the separate vibrations which compose it. In the same way, if a yellow and a blue powder be intimately mixed, the eye loses the impression of the component colours, and acquires a new impression—that of green. So also if we pass the finger over the surface of a finely-cut file, we cannot appreciate the grooves individually, but only a general roughness of surface.

Section II. On the Sources of Sound.

It will be instructive to inquire somewhat in detail into the sources of sound, with a view to ascertain the modes of vibration of various elastic substances. Those best adapted to our purpose are, 1. Strings. 2. Plane surfaces. 3. Curved surfaces. 4. A confined column of air; and 5. The human voice.

1. *The Vibration of Strings.*

Fig. 1.



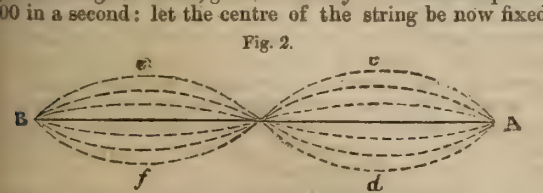
In fig. 1 a string A B is stretched tightly between two fixed points. If we draw the string aside into the position A c B, a certain resistance will be experienced, which increases with the displacement. Now it is obvious that the path A c B is longer than the right line A, B, and the string, in order to occupy the former position, must have its fibres or particles separated, or strained somewhat farther apart. The resistance to this separation constitutes what we term the elasticity of the string—a property common to all substances, but in various degrees. The moment the string is liberated it darts back to its former position; but, as a momentum or force of motion is acquired by every moving body, so the string is not only carried back to A B, but passes beyond this position as far as A d B. This can only be brought about by a straining, or separation of particles similar to that which before occurred, and again the force of elasticity urges the string to return to its rectilineal position: this again creates a momentum which carries it a second time nearly to A c B, and these repetitions continue until the string finally attains rest. This it would never do, were it not that the excursions on either side of the normal position gradually decrease in extent on account of friction at the two extremities, and of the resistance of the air. These oscillations continue to diminish in extent as the string gradually attains the position A *e* B, and A *f* B, which, in its turn, decreases to A *g* B, and A *h* B, and finally the oscillations are reduced to nothing.

But it is a most important and beautiful law, that whether the excursions be large or small, they are performed in equal times, thus furnishing an analogy to the oscillation of the pendulum. The explanation is simply this:—the farther the string is removed from the position of rest, the greater is the elastic tension, and consequently the greater is the momentum and velocity with which it returns to its original position; and these two elements, the extent of the displacement, and the rapidity of the return, are found to increase in exactly the same ratio.

Every passage of the string over the position of rest is called a vibration; and the most convenient mode by which two or more velocities of vibration can be compared is by choosing some small unit of time, and reckoning the number of vibrations which occur in each. This unit has been fixed at one second, and the estimate of comparative velocities is conveniently made by means of it.

Now let us suppose that in the string the displacement, whether large or small, gives a velocity of vibration equal to 100 in a second: let the centre of the string be now fixed,

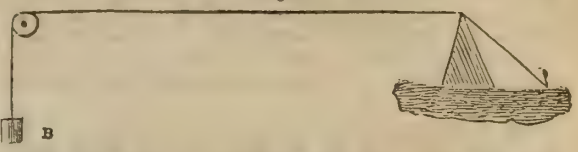
Fig. 2.



as in fig. 2, and the string drawn from its position at *c* or *e*: it will now be found that the number of vibrations in a second of time is exactly doubled.

But if, instead of varying the length of the string, we vary the tension or the force with which it is stretched, we find the following results: the rapidity of vibration increases as the square root of the tension: this it will be observed is a different ratio from the preceding, and is ascertained thus—suppose we had an arrangement by which one end of the string is fixed as in fig. 3, and the other, passing over a

Fig. 3.



pulley, is attached to a weight which gives it a certain degree of rigidity or tension: suppose that the weight attached is 5 pounds, and the resulting tension is such that the string vibrates 100 times in a second; to make the vibration twice as rapid, the weight must be increased the square of 2, or 4 times: to make the rapidity 3 times as great, the weight must be the square of 3, or 9 times as great, and so on. This same mode of experiment may be adopted for showing the fundamental fact that below a certain rapidity of vibration, no perception of sound is induced. If the weight attached to B be very small, and the string be struck at the middle of its length, the vibrations will be sufficiently slow for the eye to follow them, and if the number be less than 16 in a second, no sound will be heard; but if an additional weight be appended to B, so as to increase the tension of the string, the rapidity of vibration will be increased—the eye will not be able to count the vibrations, and sound will be audible: and in proportion as the weight is increased, so does the sound become more distinct and more elevated in pitch.

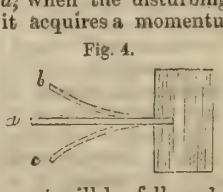
The third circumstance which modifies the rapidity of vibration is the thickness of the string: by doubling the thickness of a cylindrical string we obtain 4 times the bulk or mass, and it is found that if we have two strings of equal length and equal tension, to produce twice as great a velocity of vibration in one as in the other, requires that it should be twice as thick, or 4 times the sectional area. This relates to the comparison between the frequency of vibration in two cords of which the length, thickness, or tension are in a different ratio: but with regard to the absolute number of such vibrations in a second of time, recourse is had to a mode of calculation which is not sufficiently elementary to obtain a place here.

2. *The Vibration of Plane Surfaces.*

If a plane surface, such as a square piece of glass, be held in the centre by any mechanism which will leave the edge free to vibrate in a direction perpendicular to the plane of the glass, and a violin-bow be drawn across one of the edges, it will set the whole plate, with the exception of the part by which it is held, into vibratory action. The manner in which the vibration of one part of the glass induces similar vibrations in the other, will be better understood, if we first consider a piece of glass to be fixed at one edge, and vibration excited at the opposite edge.

Let a slip of glass, (*a* fig. 4) be fixed firmly at one end into a block of wood. If the edge *a* be bent down to *c*, it will return with great rapidity to its former position *a*, when the disturbing force is removed: but in so doing it acquires a momentum which carries it to the other side

Fig. 4.

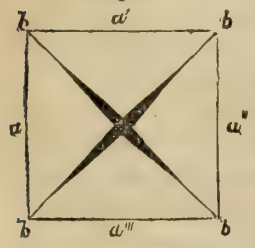


of the plane of repose as far as *b*, nearly as far above its original position as the disturbing force had depressed it below the same: the reasoning which was applied to the case of a string, will likewise apply here: the second displacement will be followed by a second effort to reach the position of repose, and that will again be nullified by the impossibility of the motion of the glass being terminated at the precise point required: thus is engendered a series of vibrations alternately above and below the plane of repose, but the deviation from that plane becomes less and less at every vibration, on account of the friction at the end *a*, and of the resistance of the air, (the same two causes which retard and ultimately extinguish the oscillations of a pendulum).

The remarkable isochronism, or equal-timedness, in the vibrations is observable as well as in the stretched string: whether the original displacement from the position of

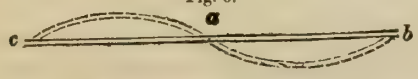
repose be great or small, the vibrations are performed in equal times, depending on the proportion existing between the length, breadth, and thickness of the glass. But if a square piece of glass be fixed at the centre and a fiddle-bow be drawn against the edge, the stationary position of the point causes a remarkable break in the continuity of the vibration from one edge to another: the nature of this obstruction is best shown by previously sifting upon the glass a thin layer of dry powder; on drawing the bow across the edge at *a*, fig. 5, the powder will be thrown on the diagonals of the glass, while scarcely any will remain on the four triangular spaces included between those lines. From this we learn that the diagonals of the plate are almost entirely stationary; that the points *a* *a'* *a''* *a'''* are in active vibration, which vibrations decrease in extent as we proceed from those points to the centre *a*, or to the corners *b*. It also follows that at the moment the section *a* is below the plane of repose, the opposite section *a''* is also below the same plane, but the other two portions *a'* *a'''* are *above* that plane.

Fig. 5



We will endeavour to show why this alternation of position is necessarily brought about: let fig. 6 represent a

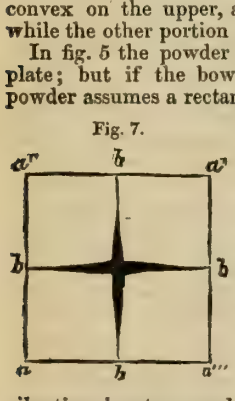
Fig. 6.



horizontal section of the plate, of which the middle point *a*, is one of the diagonals or corner lines: if by the impulse of the bow, the part *a b* be depressed below its natural level, its under, or convex surface is necessarily greater in extent than the upper, or concave surface, as it forms a similar portion of a larger concentric curve. The particles of the under side of the glass, therefore, must be somewhat strained, or drawn farther asunder, to admit of that extension of surface: but such is the tendency to an equalization of pressure among all bodies, that in order to compensate for the expansion of the lower side of the glass, in the portion *a b*, the portion *a c* takes a curvature upwards, that is, it becomes convex on the upper, and concave on the lower surface, while the other portion *a b* is the reverse of this.

In fig. 5 the powder is collected on the diagonals of the plate; but if the bow be applied near one corner, the powder assumes a rectangular figure, as shown in fig. 7: a similar explanation will apply here: the corner of the plate to which the bow is applied, is drawn down from its original position, and induces a similar displacement in all the particles around it: this displacement, by making the under surface at and near the point *a* convex, while the upper surface becomes concave, causes an unequal expansion of the two surfaces, which continues to the points *b*; the maximum of vibration is at *a*, and it decreases towards *b*, where it attains its minimum, but at those points a tendency to an opposite curvature of the adjoining portion commences, for the reasons before stated; and the portions *b a''' b* and *b a' b* become convex upwards: these two again act on the fourth division (*b a b'''*) which becomes convex on the under, and concave on the upper surface, the same as the first portion.

Fig. 7.



These remarkable phenomena have been traced through a very extensive range of modifications. By holding the plate at the centre, and applying the bow to various parts of the edge; or by fixing the plate in the middle of one side, and applying the bow to different parts of the other three sides; or by holding the plate at one *corner*, and exciting vibration at different positions with regard to it, an almost endless variety of figures have been produced. A few examples are given at the head of this article. In these and similar examples the lines occupied by the accumulated trains of powder are called nodal lines: they represent the parts of the glass plate which remain still while the other parts are in a state of active vibration.

By varying the forms and dimensions of flat surfaces, whether of glass or any other material, as also the modes of vibrating them, a variety of beautiful results has been obtained. These experiments are very surprising to a person who witnesses them for the first time: the powder seems as if endowed with voluntary motion, and assumes these beautiful forms with a rapidity which the eye cannot follow. But the object of these inquiries is far higher than the gratification of curiosity: they throw considerable light upon the constitution of matter; the arrangement of its particles and the properties resulting therefrom, as elasticity, hardness, fragility, malleability, &c. A further discussion of the subject would lead us into a difficult department of science: we will therefore conclude this part of our subject with an easy and practical example.

When the points of support in a circular plane surface extend round the whole circumference, as in the parchment head of a drum, the whole plate or surface generally vibrates in one unbroken system; but the membrane may be struck or pressed in such a manner that an impulse communicated to one spot of the surface may not have time to extend itself over the whole surface before the retrogade motion of the disturbed point commences; in this case a nodal line will be formed at the limit of the sphere of the original impulse; thus, it has been found that in certain mining operations connected with military engineering, some sand has been strewed on the head of a drum, and the latter placed either over, or in near approximation to, a supposed excavation or subterranean gallery; any operations performed in the latter which are calculated to excite tremulous impulses in the air or the ground near it, will, when communicated to the drum, cause the dust or sand to assume certain forms, according to the nature of the impulse communicated to it, and engineers accustomed to those operations have been enabled to determine as to the nature of the operations going on beneath, and in what direction the locality was disturbed, by observing the forms into which the sand is thrown on the drum. In these cases, as in the former, the nodal lines are indicated by the form assumed by the sand on the vibrating surface.

In the cases which we have been considering, the surfaces are supposed to vibrate *transversely*, *i.e.*, in the direction of the thickness; but in some important experiments which have been instituted by Savart on the vibrations in a plane parallel to the surface, these he terms *tangential* vibrations, and they are most readily produced by *rubbing* the surfaces of bodies. His experiments were performed with square, circular, triangular, or longitudinal pieces of glass, with bars, with solid or hollow cylinders: these on being suspended lightly in the middle, and rubbed longitudinally with a wet cloth, will indicate nodal divisions of a complicated character; the nodes on the upper surface being vertically over the most actively vibrating points on the under surface and *vice versâ*. In a cylinder the nodal lines form a spiral, making four turns round it in its progress from end to end. On plane surfaces these nodes are detected by sprinkling dry lycopodium as before described; but with cylinders small rings of paper were hung upon it, and their state of agitation or rest indicated the presence or absence of vibrations.

3. *The Vibration of Curved Surfaces.*

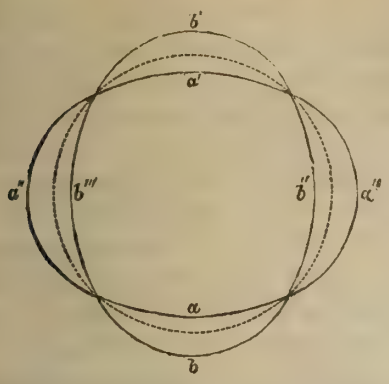
If we draw a violin bow across the edge of a glass goblet, or any similar vessel, a musical note is produced, which depends for its existence on several remarkable changes in the form of the glass itself; so minute indeed that the unassisted eye can detect no motion. It is, however, easy to prove that when the glass receives its first impulse from the bow it is thrown into the form *a a' a'' a'''* fig. 8, which the instant afterwards is changed to the position *b b' b'' b'''* the dotted circle being the position of the rim of the glass in a state of repose.

If we hang four little hooks upon the rim of the glass we shall find that they will be greatly agitated by the vibration of the glass, excepting at four points of its edge, at which points they will be at rest, or nearly so: these four points are equidistant from each other, and it will be seen that the point to which the bow is applied is equidistant between two of them: if the hooks be placed at those positions at first, they will remain there, but if at other points, they will travel round to the resting points.

The existence of these four points is very pleasingly shown by the use of lycopodium, the seed of the *Lycoperdon bovista*, which possesses a degree of fineness greatly exceeding the generality of powders, each grain being, according to Wollaston, less than the 85,000th of an inch in diameter.

For the use of this powder, a conical-shaped vessel is better than the shape of a goblet, but the latter will do.

Fig. 8.



By sprinkling the lycopodium dust on the interior surface of the glass (to which a small quantity will adhere), and then vibrating the glass with a bow, a considerable portion of the powder will be shaken from off the surface, with the exception of four narrow lines of powder reaching from the top of the glass a considerable way down: in these lines there is very frequently not only the original portion of dust remaining, but an additional modicum derived from the other portions of the glass; and it will be always found that the point to which the bow is applied is midway between two of the lines.

To these modes of detecting the existence of vertical lines in the glass, having different properties from the remainder of the surface, we will now add another, which is, perhaps, more convenient in its application, and more appreciable; we mean, the presence of water, or any other liquid, in the glass. Water, coloured with litmus or ink to deaden the transparency, will answer very well.

If, when the glass is about half filled with water, it be vibrated by passing the moist finger round its edge, the liquid surface becomes broken up into a figure of four fans, which rotate in the direction and with the velocity of the finger, the latter being always midway between two of the fans, its pressure causing the point on which it rests at any given instant to assume the condition of a node; but if the glass be excited to vibration by means of a bow, the surface of the water is thrown into the form represented by fig. 9. From four equidistant points of the glass emanate four fans of liquid undulations, which proceed nearly to the centre of the liquid surface; and it is seen that, whatever part of the glass be chosen as the point of excitation, one of the fans emanates from beneath that point. The oblique action of two contiguous fans raises a faint ridge which proceeds from each node to the centre; while the extreme ends of the four fans form, in meeting at the centre, a net-like figure, which is generally that of an imperfect square.

Fig. 9.

The last corroborative evidence of the existence of these four remarkable points in the circle of the glass which we shall mention, is obtained by the use of any oily or viscid fluid, such as is calculated to adhere to glass more than water does. If the vessel be half filled with such a liquid, (care being taken to preserve the inner surface of the glass, between the oil and the rim quite dry,) and vibrated by one rather decided stroke of the bow, it will be seen, on viewing the glass horizontally, that four vertical curves are formed by an upward starting or motion of the oil in four places, by which a small stratum is left adhering to the surface of the glass, and, in analogy with previous instances, the point of excitation occupies a position immediately over the highest point of one of these curves.

There are many other methods of proving the existence of four equidistant and quiescent points round the surface of the glass; but these instances will suffice. Let us now attend to the explanation of the phenomena. As in the stretched cord, so in the goblet; the action of the bow throws the vibrating body into a new curve, which, in the present case, is an ellipse.

When the impulse has produced the greatest displacement of which it is susceptible, a momentary state of rest occurs, in which the glass is elliptical; but its elasticity will not permit a continuance in that form: the depressed portions acquire an outward tendency, and the elongated portions a tendency towards the centre; there must therefore be points where these opposite tendencies neutralize each other, and those points must necessarily be the parts of the glass which were not originally disturbed from their position of repose.

By the time the segments have regained their original position, they acquire a momentum which carries them beyond the circle of repose, the two outer segments passing within, and the two inner segments passing without. A moment's consideration will show that this action must generate an ellipse, of which the longer axis is at right angles to the longer axis of the former ellipse *a a a a* which it has just superseded: this we may represent by the ellipse *b b b b*, fig. 8.

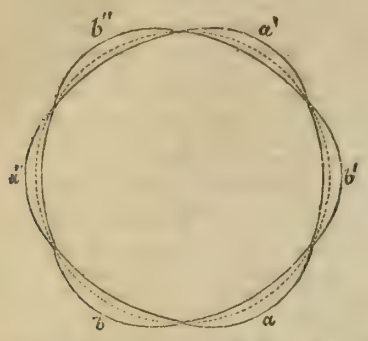
It will now be well understood that the same causes which produced the destruction of the first ellipse will act with equal force on the second; elasticity will carry the displaced segments back to their original positions, and in so doing will generate a momentum sufficient to carry them beyond that boundary, and thus give rise to the formation of an ellipse similar to the first, and at right angles to the second. Thus these reciprocations succeed each other until the resistance of the air and other circumstances finally, but gradually, subdue them; for it should be understood that each successive ellipse is less elongated than the preceding.

The description of these changes necessarily takes a considerable time, but the changes themselves occur with almost inconceivable rapidity, being several hundred times in a second; and as our visual powers are quite inadequate to detect the individual members of such a rapidly-recurring series, whatever effect either ellipse considered separately is calculated to produce, we estimate the result as if both ellipses were co-existent; and this will now enable us to explain the quadripartite phenomena before described. If water be contained in the glass, the transformation of the latter from a circular to an oval form necessarily occasions a flow of water from the flatter towards the smaller ends of the ellipse: when the latter is reversed, a flow occurs in the opposite direction, and as the eye cannot detect any interval of rest between the two, an impression of their simultaneous existence is left upon the mind. Thus the form of fig. 9 is presented to us, and thus shall we be enabled to apply the same mode of reasoning to the points of rest indicated by the hooks, powder, &c. While the four segments of the glass are rapidly vibrating to and fro, the four intermediate points, being urged as it were, between two equal forces, do not move at all, and any bodies placed against those points will be nearly as quiescent as if the glass were not vibrating: thus if the little hooks be symmetrically placed equidistant from each other, and the bow be applied midway between two of them, the two resulting ellipses will cut each other at the points on which the hooks are placed, and then those points become nodes or quiescent points which are not likely to disturb the hooks placed upon them; but if the latter be placed at other points, or if the bow be applied other than midway between two of them, the hooks partake of the vibratory action of the parts of the edge on which they are resting, and are gradually shaken to those points where the agitation is less vigorous, and finally attain the nodal points.

With respect to the lycopodium dust, it is evidently shaken from those parts which are actively vibrating, because its adhesion to the glass is very slight; but as there is no motion occurring at the nodes, there is no reason why it should be removed from thence, and we consequently find that a line of powder remains on the quiescent points. It must here be remarked that although, for convenience, we have spoken of the glass as a vibrating circle, the effect is obviously carried a considerable distance towards the bottom, and instead of nodal *points*, we have nodal *lines*, down which the powder remains undisturbed. Thus may these interesting phenomena be analyzed, and the rationale of their production traced step by step; but the inquiry by no means stops here: we have treated of that combination of circumstances which will induce a system of four vibrating segments in the glass, but we shall find that the same principle, modified in its individual application, is discernible under other conditions, into the consideration of which we will now enter

If the impulse given by the bow be less energetic than that which produced the effects before described, there exist good reasons for believing that the glass assumes a form

Fig. 10.



analogous to *a a a*, fig. 10. Let us suppose that the bow is applied at the point of the glass marked *a*: a segment is drawn out of the circle, as before, but by the time the impulse reaches the nodal points on either side of it, the elastic tension urges the two adjacent portions, *b b*, within the circle, to restore equilibrium: these three segments together take up a semicircumference, which acts upon the opposite semicircumference by momentum, thus:—the two lateral segments, *b b*, by passing too far towards the centre, induce a protuberance in the more remote portions, *a' a''*, which, in their turn, generate a third depression at *b''*; thus, then, we obtain three segments exterior and three interior to the original circle of repose, which give to the periphery, taken as a whole, the form indicated by *a a' a''*. Let us now bear in mind the manner in which one ellipse gave rise to another ellipse which immediately succeeded it, and we shall have but little difficulty in concluding that the same principles will convert the heart-shaped figure, *a a' a''*, into a similar figure, *b b' b''*, the elongations of the former coincide radially with the depressions of the latter, and the depressions of the former with the elevations of the latter. There will be obviously in this case six points where the two superposed figures cut each other, and these points, from the principle before alluded to, will be at rest.

This, it will be observed, is a theoretical deduction of what would occur if the primitive impulse were not energetic enough to draw a quarter of the circle out of the position of repose; but we will now proceed to give practical illustration of the existence of these three-sided figures. In drawing the bow across the edge of the glass, it will be found that more than one sound can be heard; frequently four or five; all musical and rich, but all different in pitch. If now, by the presence of water in the glass, we obtain a figure of four undulatory fans on the surface, we shall invariably find that the musical note elicited at that moment is the lowest in point of pitch of all those which it is capable of producing; and as the surface is never broken up into a less number than four vibrating segments, and four nodes between them, it will be convenient to call the musical note produced at that moment, or by that mode of vibration, the *fundamental note*. If now we draw the bow smartly across the edge of the glass, with a motion which may be called quick rather than forcible, we shall obtain the next higher tone, and at that moment the liquid surface presents six vibrating fans of undulæ, equidistant from each other, and separated by six points, where comparative quiescence is observed.

By this experiment, and by the hooks, lycopodium, &c., it is seen that the six-sided figure is due to two superposed three-sided figures.

With a slight modification of the mode of handling the bow, which it is difficult to describe, we can next produce a tone higher in pitch than that which accompanied the six-sided figure; and the invariable result will be a figure of eight sides, that is, eight liquid fans of undulæ will emanate from the sides of the vessel towards the centre of the liquid, and be separated from each other by nodal lines as before. The reader will not require that we should retrace our steps in detailing the production of this eight-sided figure, for it will be readily understood. It must be remembered that, when we say this note is invariably accompanied by a figure of eight sides, we mean that the note is the next higher in pitch to that which produced the six-sided figure; and in further evidence of the same fact, in will be found that the fourth tone which the glass is susceptible of producing will always be accompanied by a figure of ten sides, whether the indicator employed be water, lycopodium, or wire.

Generally speaking, not more than four different tones can be elicited from any one glass; sometimes, however, a fifth is appreciable, but be the number what it may, the vibrating segments and nodes always increase in number by twos as the elevation of pitch increases, they being 2, 4, 6, 8, &c.

A very remarkable and instructive effect is, however, produced, when the edge of the glass is at any one point prevented from vibrating freely: a violin performer is well aware of the effect resulting from placing a sourdine, or damper, on the bridge of his violin—the tone acquires a peculiar and subdued character, from the circumstance of the vibrations of the bridge upon which the strings rest being interfered with. In like manner, any small instrument which would act as a damper when placed on the edge of a glass, interferes with the production of those effects which naturally result from the free and unshackled vibration of the glass. We have employed a small steel instrument which clasps the edge by means of a screw, but other modes may be devised, provided that the damper where it clamps the glass presents a certain amount of plane surface probably not less than a tenth of an inch. When an impediment to free vibration, such as this, is employed, that force of vibration which would otherwise produce a four-sided figure, or one composed of two superposed ellipses, will produce but three vibrating segments, one of which is diametrically opposite the damper, and the other two so situated as to form with the third nearly an equilateral triangle, *provided* the bow be applied immediately opposite to the damper; but if it be applied at about 45° on either side of that point, four segments will be formed just the same as if no damper were placed on the edge. These effects may be tested by employing water in the glass. If we, in similar manner, produce all the other tones of which the glass is susceptible, retaining at the same time the damper on the edge, and applying the bow immediately opposite to it, we shall find that the number of ripply fans on the surface of the water is one less than if no damper were present, the numbers being respectively 3, 5, 7, 9, &c. It is not now necessary to trace in detail the causes of this; precisely the same mode of reasoning as that just adopted will avail for all, the difference of number being dependent on the difference of energy in the first impulse, or, which amounts to the same thing, the extent of curve included in the first segment.

All the phenomena which we have been detailing are produced by the violin-bow; but if the moistened finger be employed, we perceive four fans of undulæ revolving in the direction, and with the velocity, of the finger: the reason of this revolution is, that, as fast as a vibrating segment is produced by the friction of the finger, it is interfered with by another formed by the finger at the succeeding moment a slight distance from it; and thus new segments are continually forming, which give a rotatory appearance to the surface of the liquid.

4. *The Vibration of a Confined Column of Air.*

If we blow through a hollow tube, open at both ends, no sound is produced; we merely cause a wind to circulate through the tube which is communicated to the external air. Every particle of air in the tube is moved in the same direction, and that is precisely what we mean by the term wind; but when the lips are nearly closed, as in playing the flute, and the air is introduced in a very fine and narrow stream or current, that stream acts with different momentum on different parts of the aërial column: the first effect is a motion of particles from the mouth-hole towards the other extremity of the tube: this is retarded by the inertia of the more advanced particles: the resistance occasions a slight pressure of particle upon particle: this pressure is directly opposed by the elasticity existing between the particles, which elasticity beyond a certain point, overcomes the impulse derived from the mouth, and the advanced particles are driven back again to their original position, and even beyond it, in accordance with the universal law of momentum: this retrograde movement engenders a slight compression of particle upon particle in the opposite direction, and a new impulse, from the mouth-end to the remote end is the consequence; and thus a longitudinal vibration of the column of air takes place.

It must be borne in mind that the motion of particles of which we are speaking, does not embrace a sensible amount of distance, but is confined within very minute limits. In the case of wind the particles of air move though a sensible distance, and change their places; but in these instances of longitudinal vibration, the positive amount of displacement which each particle suffers is exceedingly small, and is always recovered again by the retrograde movement.

In such instruments as the clarionet, the tube full of air is exempted from such an impulse as would generate a wind, by the intervention of a piece of apparatus at the end to which the mouth is applied. This consists of a reed or small elastic slip—fixed at one extremity, while the other is free to move, but comes into contact with the opposite side of the orifice; this contact, which is easily disturbed, is broken by the force of the air from the mouth; but this is only for a minute portion of time; the elasticity again urges it to its former position of contact with the opposite side: this portion of time, however, during which contact is broken, small as it is, is yet sufficient to allow a certain portion of wind to pass through the opening, and thus produces a sudden condensation of air in the tube: the momentary closing, however, of the aperture, allows that condensed portion again to recover its wonted tension: but the following opening of the aperture, and consequent emission of another modicum of breadth, again induces a condensation; and these reciprocations occur as often as the contact between the elastic reed and the opposite surface is broken and renewed again.

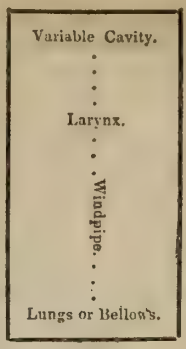
The organ-pipe is another instance of the vibration of a column of air; but these admit of two modifications—the diapason and the reed-pipes: the former resembles the flute in so far as this, that the sound resulting from the vibration of the air contained therein, is wholly dependent on the length of the pipe itself, and the position of an orifice at which the air can escape: but in the reed-pipe there is an analogy to the principle of the clarionet; the air contained therein, besides the vibration in its own length, has the second effect of setting in motion one or two vibrating tongues or reeds at one end of the tube: these tongues admit of being lengthened or shortened so as to adjust the rapidity of the vibration of the whole column of air in the tube, and the latter depends, as will be shown hereafter, on the length of the tube.

Such instruments as the trumpet, horn, bugle, serpent, &c., depend for the production of their respective sounds partly on the length, and form of the tube through which the air is thrown into agitation, and partly on a peculiar management of the lips of the performer, by which he regulates the quantity and velocity of the air which is impelled into the instrument.

In the flageolet, as in the flute, and some other instruments, there is no vibrating tongue or reed, but the whole sound is due to aërial vibration: it is necessary however to bear in mind that in wind instruments of every description, the important and fundamental source of sound is the longitudinal vibration of a column of air contained within the tube: the manner in which these vibrating columns of air are bisected, and sometimes trisected, in their whole length cannot at present engage our attention.

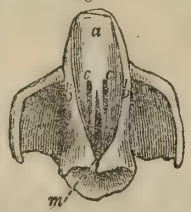
5. *The Voice.*

The most important of all the sources of sound is the voice, that faculty which enables us best to express our feelings, affections, and sentiments; "which, modified by the organs of speech, gives utterance to the hidden things of the heart, and alike enables the sage to communicate his wisdom and the fool to babble his folly. And here we have already made a distinction that will require to be attended to: the voice is one thing; it is common to us with beasts, whose cries will express pleasure or pain, rage or fondness; speech is another thing, and is the peculiar prerogative of man. It is true some animals, such as the jay, the parrot, &c., can articulate, but this is not to speak: speech is the expression of thought, and 'monkeys don't speak,' says Lordat, 'because they have nothing to say.' This simple observation, which is as philosophical as it is terse, might have saved a world of trouble to different anatomists, who spent much time in finding out, by peculiarities of structure in the organs of voice, why no animals spoke but man. Now anatomy is totally unable to resolve the question, inasmuch as several animals, who do not speak, can nevertheless articulate when taught to do so by man; it is evident, therefore, that their natural dumbness is not to be attributed to any organic cause."



The vocal mechanism in man may be considered as consisting of *lungs* or *bellows*, capable of transmitting by means of the connecting *windpipe*, a current of air through an apparatus contained in the upper part of the windpipe called the *larynx*, in which are placed two cords whose vibrations supply sounds to the variable cavity, consisting of the pharynx, mouth, and nose, and these organs convert the sounds thus furnished to them into speech. Thus the organs of speech are not very complicated, being chiefly the lips, teeth, tongue, and palate, all receiving their supplies of sound from behind, and fabricating those sounds into words. A more accurate idea of the situation of these vibrating cords, commonly called *chordæ vocales*, may be had in fig. 11, in which they are represented as they would be seen by a person looking down the windpipe from above, and able to notice the situation in the aperture. In this figure

Fig. 11.

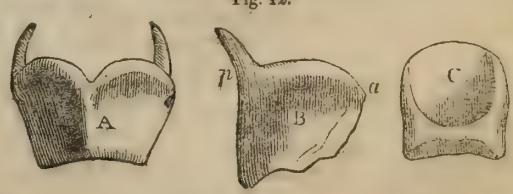


a is the *epiglottis* situated in front of the opening, and ready to shut it down so as to prevent the entrance of any substance foreign to it: two ligaments *b b* proceed from it: these are prolonged backwards so as to constitute as it were a sort of superior dilated orifice of the windpipe. The true opening of this is seen deeper down, at *m*, and to this opening is given the name of *glottis;* while at either side of it are stretched *c c*, the *chordæ vocales*, or vibrating cords, on which the production of the voice depends; and above these are seen two little depressions or cavities termed *ventricles of the larynx*, the object of which appears to be to leave space for the vibrating of the cords.

The voice is known to be formed at the exact point termed the glottis by the following experiments:—If an incision be made into any part of the windpipe below the glottis the voice is immediately lost, but if the aperture be stopped up by closing it with the hand, by placing a roll of lint in it, &c., the voice is restored. If, on the contrary, the incision is made above the *glottis*, the voice is in no way affected. In the one case the air necessary to the production of sound escapes below the glottis, and no voice is produced; while in the other case the air escapes immediately after passing through the glottis, and the voice is perfect. Other experiments, which we cannot here detail, have also proved that it is by the vibration of the chordæ vocales of the glottis that the sound of the voice is accomplished.

But this is not enough to produce sounds of sufficient loudness for the general purposes of life, nor can we see by its means how sounds are varied in character and pitch. The office of the larynx shows how these important requisites are effected. The larynx is placed like a box or case round the upper part of the windpipe, to afford a firm and to some extent a resonant fabric for the attachment of the parts immediately concerned in the production of voice. The larynx is composed of these principal cartilages; the one like a *ring* (whence it is called the *cricoid*, from the Greek for *ring-shaped*) surrounds the top of the windpipe as if to give it a finish. This cartilage is much wider behind than before: it forms the base of the larynx; and above it, in front, is placed the *thyroid* or *shield-shaped* cartilage, which is of considerable size, particularly in the neck of the adult male, where it is commonly known under the name of Adam's apple, where it is of considerable size, and not only forms the front of the larynx, but runs far back on the sides. This will be clearly understood from the following figures, in which A, fig. 12, is a front view of the thyroid car-

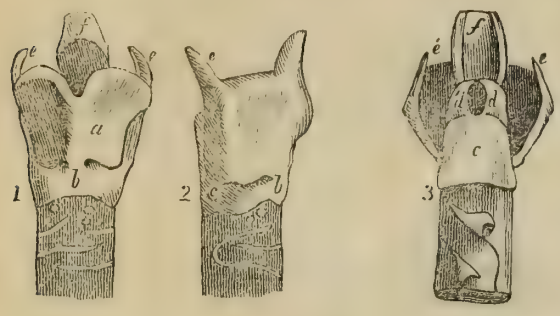
Fig. 12.



tilage, separated from all the rest; B a side view of the same, in which *a* is the anterior, and *p* the posterior extremity: C is the cricoid or ring-shaped cartilage, with its deep part

behind, while the thyroid fits down upon the narrow part in front in a way we shall presently describe. The third cartilage is the *arytenoid*, or funnel-shaped cartilage, which may rather be described as two distinct cartilages, one for each side, placed on the top of the elevated part of the cricoid cartilage; and thus completing the back part of the larynx, which, when all its parts are put together, presents the appearance represented in fig. 13, when viewed in front; fig. 14, when viewed from the side; and in fig. 15, when viewed from behind: and in each of these figures *a* is the thyroid cartilage; *b* the anterior or narrow, and *c* the posterior or broad part of the cricoid cartilage; *d d* the arytenoid cartilages, resting on the latter and meeting at the summits: *e e* the horns of the thyroid cartilage, and *f* the epiglottis.

Fig. 13. Fig. 14. Fig. 15.



These several cartilages are not fixed, but moveable upon one another by muscles; the chordæ vocales, also, are by no means to be considered as simply elastic ligaments, strained between their extreme points, and obliged to vibrate when blown with sufficient force: they are living ligaments, endowed not with a mechanical but with a vital elasticity, and supplied with muscles, which regulate all their motions to the nicest degree, placing them in that state of tension and parallelism which is necessary to the production of sound, and not only that, but moving them in every the slightest change of tone, so that we cannot doubt that every turn or trill on the human voice is produced by a succession of muscular contractions, as surely, though not so obviously, as a shake on the violin, under the fingers of a skilful player. Thus the larynx is a living musical instrument, capable of giving or withholding its sound, so long as no part of its vital apparatus is impaired, and whose vibrations depend not upon any external impressing agent, but upon a power existing within itself.

Many theories have been formed as to the manner in which the chordæ vocales act in the production of the different tones of which the human voice is capable. Some supposed that the greater or less tension of those cords produced the acuter or graver sounds. Others thought that the tones varied according as the glottis was more or less open: others, that the raising or depressing the larynx, which any person may observe by placing his hand on his own throat as he sings the gamut, afforded the true explanation. M. Magendie, however, has set the matter at rest by direct experiment: it will be sufficient for us to give his conclusions only (which are admitted by most physiologists), inasmuch as his details are not fit for the general reader. When sounds are grave, the ligaments of the glottis vibrate in their whole length, and the expired air passes out in the whole length of the glottis. In acute sounds, the ligaments do not vibrate in their anterior part, but only in their posterior, and the air passes only in the part which vibrates; the opening is therefore diminished. Lastly, when the sounds are very acute, the ligaments present vibrations at their arytenoid (posterior) extremity only, and the expired air passes only by this portion of the glottis. It appears that the extreme limit of acuteness in sounds happens when the glottis closes entirely, and air can no longer pass through the larynx.

These conclusions are supported by a well-known occurrence, and that is, the prominence of the thyroid cartilage (Adam's apple) in the neck of men, and not in those of women and boys. The explanation is this: the chordæ vocales are attached behind to the arytenoid, and before to the thyroid cartilages; consequently if these cartilages remove to a greater distance from each other, the cords must become longer. But this removal cannot take place by the retiring back of the arytenoid, for it is placed just against the gullet, and if it went further back, would interfere with our swallowing: it must therefore be accomplished by moving forward the thyroid, and this takes place in boys just at the age of puberty, when the voice becomes of a deeper tone, in consequence of the lengthening of the cords, and is said to be *cracked;* the individual produces sometimes a high tone, sometimes a low one, not having yet learned exactly to adapt the muscular contractions to the new state of his vocal chords. This change never takes place in women, consequently their voice at all times retains the high tone it had in childhood.

It will now be understood how a variety of tones may be produced by means of the apparatus described; but how these tones are uttered with a stronger or weaker accent is not so clear. It is probable that the greater or less quantity of air forced out in a given time is the chief means of increasing or diminishing loudness, by increasing or diminishing the *extent* of the vibrations. A certain adaptation of the parts, however, is here required, otherwise not only would the intensity be increased, but the tone elevated in pitch. When the wind is blowing moderately through a key-hole a low murmuring sound is produced; but when the strength of the wind is greatly increased by a storm the low murmur becomes a shrill whistle. The same effect would take place if our glottis were immoveable every time we attempted to shout or call loudly; that it does not take place, is the result of our larynx being a vital instrument placed under the governing influence of the mind, or acting in unison with it, and therefore not imitable, except to a certain limited extent, by any of those mechanical contrivances which, under the name of speaking figures, have from time to time excited the curiosity of the public.

The quality of voice, the timbre, or that peculiar property which enables us to distinguish one individual among a thousand, and informs us of so many of the actions of matter, both animate and inanimate, is difficult of explanation. This quality of sounds is the name given to the difference of notes of the same pitch when produced by different means. A flute and a violin may be in unison, but the notes are still quite different sounds, and although each may be due to the same number of vibrations, yet one of them cannot be mistaken for the other. It is this kind of difference which distinguishes the voice of one man from that of another, and serving as it does, to connect the voice with the particular person, it seems an almost indispensible property of sounds, in order that language may be a medium of intercourse between man and man.

We can give no explanation of the *quality* of sounds: we may indeed surmise that the proportions and nature of the sounding body are important elements: the weak and wailing voice of infancy may result from the soft, spongy, and yielding state of the cartilages; the more powerful and resonant voice of manhood may be the effect of the parts having acquired their due proportions, hardness, and strength: alterations produced in the voice by disease may be due to the lining membrane of the larynx becoming thickened and enlarged by inflammation; and, finally, the disagreeable, broken, and cut voice which sometimes accompanies old age may be referred to an impeded freedom of motion, a want of uniform density, on account of the deposit of bony matter in different parts of the cartilages. All these causes may have their influence, and further modications may be accounted for by varieties in the thickness, consistency, length, and structure of the chordæ vocales: the nature and form of the cavity through which the voice passes after being formed, must also be taken into account.

It does not fall within our present object to enter into details respecting speech and articulation; nor, at present at least, to trace the curious variations in the organs of voice among the lower animals.

In another Supplement we shall have to notice the voice as a musical instrument, the construction of which we have thus far endeavoured to explain.

LONDON:
JOHN WILLIAM PARKER, WEST STRAND.
Published in Weekly Numbers, price One Penny, and in Monthly Parts, price Sixpence.
Sold by all Booksellers and Newsvenders in the Kingdom.

THE

Saturday Magazine.

No. 632. MAY 7TH, 1842. { PRICE ONE PENNY.

RUBENS AND HIS WORKS. I.

RUBENS.

PETER PAUL RUBENS, who may be considered as the prince of Flemish painters, was not only an illustrious artist, but a man of much learning, sagacity, and knowledge of the world. He was born at Cologne, 29th June, 1577, to which place his parents had retired to avoid the calamities of civil war then raging around their former dwelling-place, the town of Antwerp, where his father of Rubens had held the respectable offices of jurist and magistrate. Much care was bestowed on the early education of Rubens, and the progress he made amply responded to the assiduity of his instructors. He showed an early taste for literature, and made rapid progress in the Latin language.

The Duke of Parma having restored the town of Antwerp to the dominion of Spain, the family of Rubens returned to their country: and our artist, being then a fine youth of sixteen, was placed in the establishment of the Countess de Laling as page. Here the licentious manners of his companions so disgusted the upright mind of the young man, that he repeatedly solicited permission to resign his post, and return home. At length he obtained his mother's consent (his father being now dead) to devote himself henceforth to the study of painting. He was first placed with Tobias Verhaegt, a clever landscape painter, and afterwards with Adam von Oort. The character of this man was so debased that Rubens left him, and entered the service of Othovenius, court painter to the Infanta Isabella and the Archduke Albert, and at that time considered as the Flemish Raphael. The pupil applied himself not only to copy the beautiful touch of this master, which he soon equalled, but he also took him for his model as to politeness of manner, general conduct, and application to study.

When he had attained the age of twenty-three, he thought it was time to visit Italy and complete his education as an artist, and as his former situation had introduced him to the knowledge of some of the nobility, he found no difficulty in making his way. According to some writers, Albert, duke of Austria, sent him to Vincent de Gonzaga, duke of Mantua, who received him favourably and gave him a situation in his household, where he remained seven years, more occupied in studying his art than in following the frivolous amusements of those with whom he lived. Here he had an opportunity of studying the

frescoes of Giulio Romano, and the other works of art then belonging to the Gonzaga family. It is said that being one day deeply engaged with a classic subject, he was endeavouring to kindle his genius by repeating aloud the lines from Virgil which bore relation to it. The duke, who had entered the apartment unperceived, smiled at the vociferations of the artist, and thinking to embarrass him, addressed him in the Latin language. His surprise was great when Rubens answered him in terms worthy of the age of Cicero. He now interrogated the artist, and learned the particulars of his birth and education, and those, together with the amiable qualities and the rare talent he had observed in the young man, raised him highly in his estimation.

Towards the end of the year 1601 Rubens paid a hasty visit to Rome, and afterwards to Venice, where he closely studied the works of Titian and Paul Veronese, who, of all other masters, seem most to have assisted him in his taste for colouring. Three pictures, executed for the church of the Jesuits in Mantua, bear traces of the style he was then studying. The duke of Mantua, having long wished to possess copies of some of the most valuable pictures in Rome, now employed Rubens on the task, and at the same period the artist found time to execute three paintings for the Archduke Albert, the subjects of which were the Crowning with Thorns, the Crucifixion, and the Finding of the Cross, remarkable specimens of his style of painting at that period.

It was probably on his return from Rome that Rubens visited Florence, where he received a distinguished welcome from Grand Duke Ferdinand I. The description of Rubens' personal and mental endowments at this period seem to prove that he was more than ordinarily gifted, and calculated to please:—

"To a handsome and well-proportioned frame was united a certain dignity of demeanour. His regular features were set off to advantage by a fine complexion, and glossy brown hair; and his eyes, beaming with a softened fire, gave to his whole countenance a character at once gentle, animated, and noble. To these advantages were added a most captivating manner, and an agreeable voice, an active clear intellect, with a turn for humour, and an habitual self-command." These advantages caused the duke of Mantua to name our artist as a fit person to be the bearer of a commission to Philip III., king of Spain.

In this honourable character Rubens set out, laden with rich presents for the Spanish court, and by his tact and the gracefulness of his manners, he soon made himself a favourite with the king and the whole court. He painted a great number of portraits and of historical pictures during his stay, and these brought him immense sums of money. His name made so much noise that John, duke of Braganza (afterwards king of Portugal), protector of the arts and sciences, wrote to a nobleman at Madrid, to prevail on the painter to go to Villaviciosa, where the duke resided. Rubens accepted the honour, and set out with such a train of attendants, that the duke, alarmed at the expense which such a guest would occasion, despatched a messenger to the artist, when he was only a day's journey from the court to beg him to defer his visit to another time. This message was accompanied with a purse containing fifty pistoles, to repay Rubens for the expense he had already been at, and for the time he had lost. Rubens replied that he could not receive this present as he had taken the journey, not as an artist, but for the purpose of eight or ten days' recreation at Villaviciosa, and that he had brought with him a thousand pistoles to spend during his stay. Such a rapidly acquired fortune, shows at once the high success which he had met with in Spain.

On the return of Rubens to the court of the duke of Mantua, he obtained leave again to visit Rome, where he had been commissioned to paint an altar-piece for the church of Santa Maria Vallicella. His next visit was to Genoa, where historical pictures and portraits occupied his attention. The principal persons of the city engaged him to lay down the plan of some fine edifices, and he also drew the elevations, which were engraved, and formed a large volume. At this time when he was in the height of his fame, and when every day brought fresh proofs of the esteem in which he was held, he suddenly left all his honours and his employments on the news of his mother's dangerous illness. With his utmost diligence, however, he was not able to reach Antwerp in time to see her before her death, and this circumstance, together with his acute feelings on her loss, threw him into a state of the deepest affliction. For a long time he shut himself up from the society of his friends; and it was only by degrees that he began to find pleasure in his former employments.

At length he began to make arrangements for his departure to Mantua, when the Archduke Albert, being informed of his intention, expressed to him the regret he felt on the occasion. He assured him that he could not suffer, without interference, the departure, and the loss to Flanders of its most distinguished ornament. These marks of kindness and distinction made Rubens hesitate, and becoming at that period attached to his future wife, Elizabeth Brants, he finally gave up his intention of quitting the country.

Soon after his marriage, which took place in 1609, Rubens built a house, which from the descriptions given of it should rather be called a palace. His study was built in the form of a rotunda, and lighted from above; in it were placed vases of porphyry and agate of great value, the finest busts both of ancient and modern workmanship, with choice collections of medals and paintings. The collection altogether was considered as that of a prince, rather than of a private individual. The Duke of Buckingham saw this collection, and earnestly desired to get possession of it. At length he prevailed on the artist to allow him to purchase a part of it. But though he sent sixty thousand florins as the purchase-money, Rubens parted with his treasures with the greatest reluctance, and only at the repeated solicitations of the English nobleman. It was somewhere about this time that Rubens painted the beautiful picture in the Munich Gallery representing himself and his wife seated in a garden.

Dr. Waagen says of this picture, "The air of sober affection in the couple, who are seated in an arbour of honeysuckles, the expression of calm intellect and energy in the head of Rubens, and of cheerful good-humoured contentment in that of his wife, lend a peculiar attraction to this picture, and speak direct to the heart; in this respect it differs as much from the peculiar style of his latter works as it does in the more strongly marked outlines, the less glowing colouring, and the careful execution of the well-adjusted and elegant attire of the figures, as well as of the foliage and herbage in the foreground."

Rubens now began tranquilly to enjoy his fortune and his reputation. Though he continued to paint, he appeared to do so chiefly to gratify his taste, and out of complaisance for the curious, who showed the most eager desire to obtain some of his works. His wealth was very considerable, and at length became immense. He imagined and executed his pictures with great ease, and was able to continue long at his easel without any detriment to his health. But for the sake of finding time for the different sorts of study which his mind led him to, he adopted a strict division of his hours, and a regularity in the order of his studies which nothing was permitted to change. And he knew how to admit together occupations which were not opposed to each other. He never painted without having some extract from sacred or profane history, or poetry read to him, and his acquaintance with languages (of which he spoke

seven) made the authors of other nations familiar to him. This amount of knowledge had enriched the genius of the painter, and ornamented with many agreeable and entertaining qualities the man of the world. Rubens was never idle, for his hours of recreation were those which he devoted to the belles lettres.

The number of his pictures was no less remarkable than their beauty. The "Four Evangelists" and the famous "Descent from the Cross" were the pride of Antwerp. Every town in the Low Countries disputed for the honour of possessing one of his masterpieces, and the cities of Italy showed equal emulation. Genoa, Bologna, and Milan obtained only as it were by favour a small number of his pictures, and these were placed among the wonders of Italy. At last, overcome by the number of demands that were made on him, Rubens adopted the expedient of employing his most advanced pupils. He made them work out his designs, and only retouched them himself, but that so exquisitely that it requires much connoisseurship to detect them from those which were solely his own. Wildens and Van Uden painted landscape; Sneyders fruits, flowers, and animals; Rubens presided, and knew how to blend together the different manners with such nicety of art that it seemed as if but a single hand had been employed on the work.

In the celebrated "Descent from the Cross" the boldness of the composition, the energy in the characters, the striking attitudes and grouping, the glowing, vigorous colouring, are astonishing proofs of the painter's power; and it may be interesting to our readers to be made acquainted with the circumstances which gave rise to this wondrous effort of art. It is said that Rubens, in laying the foundations of his villa near Antwerp, had unknowingly trespassed on some ground belonging to the Company of Arquebussiers. A law-suit was threatened, and Rubens prepared to defend it, but being assured by one of the greatest lawyers of the city that the right lay with his opponents, he immediately drew back, and offered to paint a picture by way of recompense. The offer was accepted, and the company required a representation of their patron saint (St. Christopher), to be placed in a chapel in the cathedral. Rubens, with his usual liberality and magnificence, presented to his adversaries, not merely a single representation of the saint, but an elaborate illustration of his name (*the Christ-bearing*). The Arquebussiers were at first disappointed not to have their saint represented in the usual manner, and Rubens was obliged to enter into an explanation of his work. Thus without knowing it they had received, in exchange for a few feet of land, a treasure which neither money nor lands can now purchase.

This work raised his fame to the highest pitch, so that when Mary of Medicis wished to adorn the palace of the Luxembourg with a series of pictures representing the principal events of her life, Rubens was sent for as the most accomplished painter of the time. The artist went to Paris in 1620, and received a commission for twenty-one compositions, which by the help of his numerous pupils he completed in 1625. The portraits were by his own hand, and are amongst the most valuable of his works, but in the composition of the historical scenes, and in the manner which he has treated the allegorical and historical personages, he is justly reproached with that depravation of taste so disagreeably apparent in the works of many of the Flemish painters of the sixteenth century. "Who that is endued with a fine and high feeling for art, can derive pleasure from contemplating a whole bevy of Olympian divinities, with their appendages represented according to the notions of the ancients, consequently half-naked, sometimes as swimming the ocean, or hovering in the air, and these brought into immediate juxtaposition with kings and queens and other personages of high rank, for the most part faithful portraits, and all in the formal costume of those times? The marriage-scene, in which a bishop is represented as performing the ceremony before an altar, in the presence of Christ, whilst the heathen god Hymen is bearing the train of the princess, has long struck even the most unqualified admirers of Rubens as unseemly." However, the queen and the court were highly pleased with the work, and it added much to the fame of the artist. Commissions poured in upon him in great numbers, and but for the assistance of others he could not have executed the half of what was required of him.

It was the design of Queen Mary to decorate another gallery in the Luxembourg with a series of paintings from the hand of Rubens, taken from the history of Henri Quatre; and Rubens did, in fact, paint the victory of Henry at Ivry, and his subsequent triumph; but the numerous demands on his time, and the troubles of the court, interrupted him in his undertaking, to the loss of the art and its admirers.

SKETCHES OF IRISH MANNERS AND CUSTOMS.

VII.

I HAVE had another opportunity of seeing a wake, and of a higher order of the people, as was proved by the physician from a neighbouring town being called in, though his fee is always three guineas. The father is a farmer, and the deceased son had realized a considerable sum by trading in America. The house is of one story, and rather long; very firmly built of very large stones, quite rough: a few trees shelter it, and it would be pretty for this country of the ugliest race of houses imaginable, were it not so jammed in by byre and pigsty that it looks quite choked; also that it is without a morsel of the little garden which would beautify a similar dwelling in England: the taste for flowers and vegetables is yet dormant.

I arrived at the farm about nine o'clock in the evening, and was shown into a low dark room, without ceiling,—open to the rafters, and under thatch. A turf fire was burning, and benches were ranged round the room in compact order: men, women, and boys occupied them, and I recognised the small farmers of the vicinity and their servants. My appearance was quite unexpected. The brother of the deceased, on perceiving me, came forward, and requested with simple courtesy that I would follow him, clearing a passage by saying, "Will yez make way for his honour?" As soon as my eyes became accustomed to the opaque atmosphere, I found myself in an inner apartment, of similar dimensions to the outer, and also without ceiling; but everything in it wore an air of greater cleanliness, and, if such a term may be applied, of greater comfort. Opposite the door blazed a cheerful turf fire: on the left, occupying the whole breadth of the room, were two beds touching each other. The curtains of the furthest were snowy white, as was the lining and coverlid; and in the centre rose the dim outline of a figure. I *felt* I looked upon the corpse. The other bed was neatly curtained with a blue and white checked stuff; and on that bed lay the bedridden mother of the deceased. There were two or three rows of raised benches, and others ranged on the floor in the greatest order, and in every available position, to afford the utmost accommodation to the guests, who amounted to about seventy, of divers ages. Even on the side of the mother's sick-bed persons closely sat; but my greatest surprise was to see three women sitting on the side of the bed on which lay stretched the corpse. A young matron sat in the middle; on her left, a very handsome dark-haired girl of eighteen or nineteen; and on her lap, with her arms around her, sat the loveliest young creature, of about

sixteen, that ever I beheld, and with an expression of gentleness and sweetness as engaging as her marvellous beauty. These three composed part of the singers of a distant chapel, two bands having assembled to do especial honour to the occasion: and there they sat, almost in contact with death, chattering in subdued tones, but with much animation of manner, uponthe persons and the scene before them.

In the centre of the room were placed a few chairs for those of the highest rank: to one of these I was conducted by the brother. I said I regretted poor Neil had not been able to overcome his illness: he replied that "it could not be helped," and immediately began a conversation upon the merits of a horse he heard my honour wanted to purchase. There was a table near the corpse bed, upon which was a very white cloth, two plates—in each of which stood a candle—and between them another plate, with tobacco and six or eight pipes: no one was smoking. Presently there was a little stir in the room, and a singular-looking man advanced to the table: the lower part of his face was of most preposterous length; his forehead extremely low; his hair plastered flat, with an occasional rebellious hair darting out at right angles; his eyes squeezed up, with a queer kind of knowingness and conceit, and a thin pinched nose: he was the precentor of one of the bands, and at his bidding the pretty trio ranged themselves round the table. Other persons advanced, leaving the bedridden woman free to breathe, and give some signs of having survived the suffocating pressure she had been enduring.

About five women and four men were arranged, and the precentor, with a most self-satisfied manner, and the air of one who would not be gainsayed, intimated that a hymn was to be sung: he then gave various injunctions to his band, accompanied with strange waggings and noddings of his head, and when he considered them duly prepared he repeated a few words of the hymn and led off the strain, followed by the rest in full cry: it was an excess of discord that I may fairly hope never to endure again. The only relief was the extreme absurdity of the precentor, his natural oddity giving greater effect to his ridiculous self-importance. Several hymns were thus performed, the company meanwhile maintaining a solemn silence, broken only by an occasional sigh or sob from one of the near relations of the deceased.

During one of the pauses between the hymns the aged father entered—a very fine old man, nearly eighty-four: he was very pale, and had suffered much from his son's death. Way was made for him through the room, which by this time was perfectly stifling: he came up to me and offered his hand, and thanked me for coming. I made some remark upon his loss, which he said had been a hard blow to him: he had not slept since. He was advised to lie down, but he said he was worse then: he declined a chair, and retired to one of the forms.

The night was by this time far advanced, and I rose to go. The son who had received me attended me out, and when we reached the outer apartment he begged me to come into another room: there I found his wife, who advanced to meet me, frankly offering her hand. She was alone, busily engaged in her domestic affairs: it was a strange contrast to the scene in the adjoining room. Pat desired her to bring the whiskey-bottle and some bread and butter for his honour, and I saw I was expected to take some. Bread and oat-cake were placed before me in a basket: a wine-glass, a tea-cup, and an earthernware tumbler were set before me, and Pat called for some cold water, as his honour might not like the whiskey alone. I took a little, and that was the only drinking I saw that night: I then departed, again being thanked for my visit, which was considered a great compliment. The singing and company continued till daylight I heard.

The next day was the funeral, which I resolved to attend: of course, I did not join the procession, which was very large, and would have been still more numerous had not the weather been so violent that the women were generally obliged to remain at home. The two priests attended, many cars, many horsemen, and a multitude on foot: some order was observed, till a most furious storm scattered them hither and thither for shelter. The chapel was two miles and a half from the farm-house, and when I arrived was half filled; and soon after I had obtained a seat in the gallery, the crowd became immense. Mass was read, with the usual dressings and undressings and gabblings: of course, the service, vestments, &c., were not very splendid. A sermon was then preached, entirely to inculcate the system of offerings, on the ground of being a gospel command, (for which St. Paul was quoted,) and begun under the Law, (for which he referred to Judas Maccabeus,) and inferred that, as such practice continued amongst the Jews, and was *not condemned* by our Saviour, it was in fact *sanctioned* by him. Jeremy Taylor and Bishop Forbes were made to corroborate these assertions. There was a good deal of praise of the character of the deceased in all his relative situations, and of his kindness to the poor, which all who had known him confirmed. And there was a strong exhortation to charity towards such as differed with them in religion; and as we were the only Protestants present, and our appearance was quite unexpected, it cannot be supposed that there was any insincerity in the exhortation to brotherly kindness.

When the discourse was concluded the priest said that "if any persons wished to make offerings, the relations of the deceased had better come forward and assist:" accordingly two kinsmen went up to the altar, and a most extraordinary scene began: they called out the names of a number of people, who they were authorised to say would give offerings: then from all parts of the chapel voices cried, "I'll give one." If they were prominently in view of the altar they named themselves, as "Jemmy O'Neil, of Fallaballa," "James O'Neil, of Baliska," "James O'Neil, his wife and baye." Well, then were shouted out the names of some thirty other O'Neils, the priest generally repeating the name if he caught their eye, or else the kinsman, or the curate, which was intended as a complimentary notification that they had behaved decently. Then a Pat Mac Aulay would begin, and a score of Mac Aulays would bawl after them: then there would be a pause, as if the zeal was growing cold. Then the priest would inquire if any others wished to show their good will, which seemed as the bellows to their feelings; and then the Blaneys, and the Mac Neils, and the Campbells, &c., &c., in tens and twenties, would shout out—then another pause—then a dropping fire as it were—and in this way, till all that chose had called their names out. The chapel was crowded to suffocation, and the contributors were very numerous, though some on departing *forgot* to deposit their offering on the plates. One was on the altar, the other on the altar steps. The priest announced the amount, and assured them it was by far the most respectable offering he had seen for a long time. It is the perquisite of the priest, and the custom is entirely disapproved by many Roman Catholics. A gentleman on this occasion expressed to us a strong feeling against it, and said he gave the smallest sum he could, and merely to avoid being marked as showing disrespect to the deceased, who had been in some way of his kith and kin. Our going was acknowledged some days after by the old father as a very gratifying compliment.

This ceremony over, the congregation dispersed, and the priests departed. The corpse remained in the chapel, and some time in the day would be committed to the earth by the kinsmen, unless the severe weather put it off to the next day. There is something very revolting in this abandonment of the poor remains, and the whole is in such contrast to our touching burial-service that it makes one feel new gratitude for the faith in which one

was born, and lives, and trusts to die. There is a very extraordinary indifference to the remains of their friends, and to what our peasantry would consider decency towards a corpse. One day we saw a car going along, with several women in it, laughing and talking as gaily as possible: something was in the bottom of the car—I could not make out what,—and we were not a little surprised at the car stopping at the door of a chapel: out jumped the women, and a coffin was taken out after them: they had been sitting or leaning upon it, uttering their jokes with as much unconcern as if it had been a log of wood.

"THE UNSPEAKABLE BLESSEDNESS OF A GODLY HOME."

HERE is the cradle of the Christian: hence he sallies forth, armed at all points, disciplined in all the means of resistance, and full of hope of victory, under his heavenly Leader. Hither he ever afterwards turns a dutiful and affectionate look, regarding it as the type and pledge of another home; and hither, when sore wounded in that conflict, he resorts to repair his drooping vigour; and here, when abandoned by the selfish sons of the world, he finds, as in a sanctuary, the children of God, ready with open arms to receive him: and here, the returning prodigal, enfolded in the embrace of those, who know not, dream not, of the impurities of the world with which he has been mixing, feels, all at once, his heart burst with shame and repentance. Merciful God! what a city of refuge hast thou ordained in the Christian home!—*The Rectory of Valehead.*

IF a man's wit be wandering, let him study the mathematics: for, in demonstration, if a man's wit be carried away never so little, he must begin again.—LORD BACON.

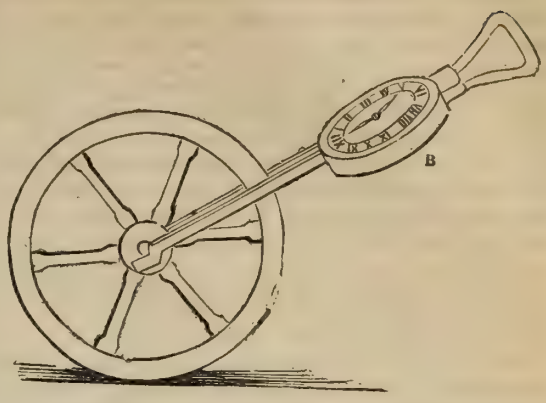
SEEK not proud riches: but such as thou mayest get justly, use soberly, distribute cheerfully, and leave contentedly.—LORD BACON.

I HAVE still chosen rather to forbear what might be *probably lawful*, than to do that which might be *possibly unlawful*: because, I could not err in the former; I might in the latter. If things were disputable, whether they might be done, I rather chose to forbear; because the lawfulness of my forbearance was unquestionable.—SIR MATTHEW HALE.

THEY who preach to us that the pursuit of virtue is rugged and painful, but the fruition pleasant, what do they mean, but that it is always disagreeable? For what human means ever arrived to the attainment of it? The most perfect have been forced to content themselves with aspiring to it, and to approach without ever possessing it. Of all the pleasures which we know, the very pursuit of them is pleasant. The attempt savours of the quality of the thing which it has in view. The felicity and rectitude which shine in virtue, fill up all its apartments and avenues from its first entrance to its utmost limits.—MONTAIGNE.

I AGREE with Mrs. Chapone, that coldness in religion is a far more dangerous extreme than over much heat. The one may consist with real goodness; nay, may be the consequence of real goodness, commixing with a perturbed imagination, or an ill-formed judgment. But coldness can be resolved only into an absolute want of feeling. Enthusiasm is excess, but coldness is want of vitality. The enthusiast, in a moral view, is insane; which implies the possibility of recovery, and perhaps, a partial or occasional recurrence of reason. The cold person is like the idiot, in whom reason never shows itself, and where convalescence is desperate. But, let it ever be remembered, that he who has really found the mean between the two extremes, will, and must, be reckoned enthusiastic, by those who are in the extreme of coldness. You can easily conceive that when any one stands on a middle point, between two others who are, with respect to him, strictly equidistant, he must, from the inevitable laws of perspective, appear to both, to be, not in the middle, but comparatively near the opposite party. He therefore must make up his mind to be censured on both sides; by the enthusiast, as cold; by those who are cold, as an enthusiast.—ALEXANDER KNOX.

ROAD MEASURERS.



IT is somewhat unfortunate that, in assigning names to scientific phenomena, instruments, and processes, the customary terms chosen are such as do not appeal to the million. The men of science throughout Europe are supposed to be acquainted with the Latin and Greek languages, and hence originated the custom of compounding new terms from those languages. The words *odometer* and *pedometer*, unfamiliar as they may sound, mean nothing more than "*road measurer*" and "*pace measurer.*"

There appears to have been, ages ago, a wish to devise some mode of determining the distance which a traveller had passed over, whether on foot, on horseback, or in a vehicle. The use of a machine, working by wheels, and moving with the traveller, is that particular form of contrivance to which we here allude. Vitruvius describes a machine which, if affixed either to a vehicle or to a ship, would, according to his opinion, indicate the distance which had been traversed. On the front of the palace of the Duke of Urbino, built in 1482, were some very elaborate carved devices, among which is an odometer; thus indicating the use of some such instrument at that period. John Fernel, physician to Catherine de Medici, used an odometer for determining the length of a degree of the meridian, in the year 1550: the only account we have of its construction is that it contained wheel-work, and that "the revolutions of the wheels were shown by a hammer striking on a bell." In 1598, Paul Pfinzing, a mechanician at Nuremberg, published a "Treatise on Measuring Land, and how to use proper instruments for that purpose, on foot, on horseback, or in a carriage." He describes a sort of odometer which was existing so late as the end of the last century, in a museum of curiosities at Dresden. In this museum was also preserved an odometer which was employed as a means for measuring roads, under the orders of the Elector of Saxony nearly three centuries ago. The Emperor Rodolph the Second, who reigned about the end of the sixteenth century, and who had a taste for the mechanical arts, possessed two very curious odometers, which not only measured distances, but registered the results on paper.

An Englishman named Butterfield, a Saxon artist named Adam Frederick Zurner, the mechanician Sauveur, the French artists Meynier and Outhier, together with other persons, all constructed odometers during the last and the preceding centuries; but very little is now known of them.

In our own country, instruments have from time to time been made, which, under the various names of *odometer*, *pedometer*, *way wiser*, *perambulator*, and *road measurer*, have been used for the purpose of measuring distances. Many of these were, at the time of their introduction, made the subject of a patent, but were little heard of afterwards. The cut at the head of this article represents a form of perambulator which has been much used on our public roads. It consists of a

wheel, two feet seven inches and a half in diameter, so adapted that the circumference (eight feet three inches,) shall be exactly equal to that land-measure which is called "half a pole." On one end of the axis of the wheel is a nut, three-quarters of an inch in diameter, divided into eight teeth, which, upon moving the wheel round, fall into the eight teeth of another nut *c*, fixed on one end of an iron rod, Q, and thus turn the rod once round in the time taken by the wheel to make one revolution. This rod, lying along a groove in the side of the carriage of the instrument, has at its other end a square hole, into which fits the end *b* of the little cylinder

P. This cylinder is placed under the dial-plate of a piece of mechanism at the end of the carriage *b*, in such a manner as to be moveable about its axis. Its end *a* is cut into a perpetual screw, which works into the thirty-two teeth of a wheel arranged at right angles to it; so that when the instrument is driven forward, this index-wheel makes one revolution to sixteen "poles" of distance traversed. On the axis of this wheel is a pinion with six teeth, which, working in another wheel of sixty teeth, carries the latter round once in a distance of a hundred and sixty "poles," or half a mile. This last wheel carries round with it a hand or index over the surface of a dial-plate, whose outer rim is divided into one hundred and sixty parts, corresponding to the one-hundred and sixty poles. Again, on the axis of the wheel last mentioned is a pinion of twenty teeth, which, working into another wheel of forty teeth, drives it round once in a mile. On the axis of this mile-wheel is a pinion of six teeth, which, working into a wheel of seventy-two teeth, causes the latter to rotate once in twelve miles. This last wheel carries an index-hand, which moves over the surface of the same dial-plate as that before spoken of; but its indications are measured by an inner graduated circle, which is divided into twelve equal parts for miles, and each of these subdivided for halves, quarters, and furlongs.

It will be evident that the indications on the dial-plate might be varied at pleasure, according to the number of teeth and pinions in the mechanism, so as to suit the standard of land measure adopted in any particular country. When this instrument is well made, it is capable of giving tolerably exact indications. Major Rennell says, that during the survey of India, he measured a meridian line of three degrees with this instrument, and found it to agree very closely indeed with the measurement given by astronomical means.

The instruments which have obtained the name of *pedometers* are generally much smaller than the piece of apparatus just described, since they are intended to be worn on the person of a pedestrian, for measuring the distance which he has walked. From the nature of this kind of muscular exercise, it is obvious that the determination of the distance walked is resolvable into the number of steps or successive movements made by the legs, multiplied into the space passed over at each step. The body rises and sinks at every step, and this alteration, provided the steps are equal in length, may be measured by an instrument called "Payne's Pedometer," invented a few years ago, and adapted to be worn in the waistcoat pocket of the pedestrian. Figs 2 and 3 represent a front and back view of the working parts of the mechanism, the cases being removed to show the interior.

The main part of the instrument is a lever L, so adjusted as to vibrate upwards and downwards at every step that is taken. This lever is furnished with a weight at one end, and a pivot X at the other. Under the lever is a spring S, which keeps the lever when at rest close up to a regulating screw R, the screw and the spring being so adjusted as to be only just sufficiently strong to overcome the weight of the lever, and to prevent its falling downwards. When the instrument is hanging in the waistcoat pocket of the pedestrian, in the position seen in the figure, every tread of the foot on the ground, preparatory to a step being made, gives a slight jerk which causes the lever to sink a little, and for a momentary period, the spring driving it up into its place again immediately afterwards. The lever thus oscillates at every step, and these oscillations are made to act on an index-hand, in the following manner. Fitted to the axis X of the lever, and moving with it, is a small ratchet-wheel A; beneath this is another and larger ratchet-wheel B, which fits on the same axis, but is not attached to it. These two wheels are connected together by a ratchet, in such a manner that, when the lever falls, both wheels are moved forward one or more teeth; but when the lever rises again by the force of the spring S, the larger ratchet-wheel B is held fast by the ratchet P. This wheel B is connected with the series of toothed-wheels and pinions C, D, E, seen in fig. 3, by means of a pinion F, fixed in its under surface. The centre-wheel E carries an index-hand, which points to the figures upon the dial-plate, to denote the number of miles passed over. The pedometer is generally made so as to register ten miles; but by regulating the proportions of the wheels and pinions, this matter can be adjusted to any standard. By placing an extra pinion and wheel in the same manner as for the second-hand of a watch, and making the wheel with ten times the number of teeth contained in the pinion, a system will be obtained, by which the pedometer will mark one hundred miles instead of ten.

This mechanism of the pedometer may be combined with that of a watch, the index moving over the dial-plate, divided so as to indicate time and distance; and thus every pedestrian, possessing such a compound arrangement, will not only be able to measure his ambulatory powers, but also to ascertain the amount of each day's walking, inasmuch as this instrument registers short as well as long walks. In the use of the pedometer, it is desirable to hang it in the pocket by means of the hook at H, in order that the lever be kept horizontal.

Fig. 2.

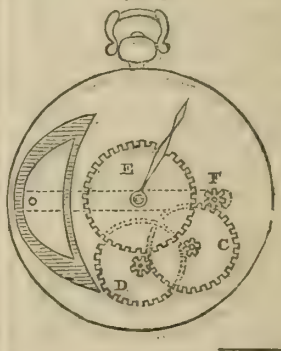
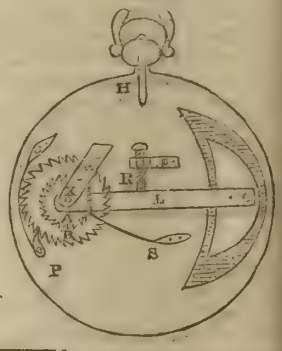


Fig. 3.



Since trifles make the sum of human things,
And half our misery from our foibles springs;
Since life's best joys consist in peace and ease,
And few can love or serve, but all may please,
Oh! let the ungentle spirit learn from hence,
A small unkindness is a great offence.
Large bounties to bestow we wish in vain,
But all may shun the guilt of giving pain.

Mrs. H. More.

For my part, I should think a man who spent his time in a painful, impartial search after truth, a better friend to mankind than the greatest statesman or hero; the advantage of whose labours is confined to a little part of the world, and a short space of time; whereas, a ray of truth may enlighten the whole world, and live to after ages.—Bishop Berkeley.

RURAL ECONOMY FOR THE MONTHS.

V.

May is the very month of mirth!
And if there be a time on earth
When things below in part may vie
For beauty with the things on high,
As some have thought earth's beauties given
For counterparts of those in heaven;
'Tis in that balmy vernal time
When Nature revels in her prime,
And all is fresh and fair and gay,
Resplendent with the smiles of May.—MANT's *Months.*

If May is the month of mirth, so is it the month of activity and rural labour. It is at this season that the work of the dairy comes into full operation, giving employment of the healthiest kind, unremitting in its nature, and most valuable in its results. The noted cheese-localities of England, and the general management of the most celebrated dairies, would be too wide a subject for our sketch of rural economy, but may afford us interesting materials for separate and particular notices ere long. Yet we cannot pass over so important a feature in this month's operations, without calling the attention of our readers to some of the poetical associations connected with this pleasing toil, and which largely tend to give their peculiar charm to the scenes of May. Few can be insensible to the feeling of peace and quiet which the sight of herds calmly grazing in the rich meadows is calculated to produce: few that avail themselves of the benefits of early rising, but have watched with interest the steps of the cow-boy as he goes whistling among the dewy grass, and

With well-known halloo calls his lazy cows:
Down the rich pasture heedlessly they graze,
Or hear the summons with an idle gaze;
For well they know the cow-yard yields no more
Its tempting fragrance, nor its wintry store.
Reluctance marks their steps sedate and slow;
The right of conquest all the law they know;
The strong press on, the weak by turns succeed,
And one superior always takes the lead;
Is ever foremost wheresoe'er they stray,
Allowed precedence, undisputed sway:
With jealous pride her station is maintained,
For many a broil that post of honour gained.

But to revert to the field-work going on in May. Attention is now demanded by the field crops in general, and the hoeing of wheat, beans, peas, &c., forms a principal employment. If wheat is sown broadcast it cannot of course be so effectually cleared from weeds, as when the drill is used, since the process is then confined to such weeds as can be removed by hand. But wherever wheat is drilled, the business of hoeing can be effectually executed: if this is thoroughly done, it is found not less beneficial to the crop by stirring the soil and closing it round the roots than by eradicating the intrusive vegetation by which it would soon be encumbered. Common hand-hoes are either made entire, or with a perforated blade, the latter being preferable for thinning crops or destroying weeds, but the former, or common square blade, for earthing up. Horse-hoes are also in great request, and of these the variety is so great that almost every implement-maker has his favourite form. A good use of the hoe, by loosening the earth, and gathering it round the plants, has been found greatly to promote *tillering*, or the production of new stalks.

Turnip-sowing commences in this month, though the main crop is not put in till June. Turnips succeed best on soils that are loose of texture, and when managed according to the most approved courses of cropping, they enter into rotation every fourth or sixth year. The land should be well cleaned and pulverized—the manure also should be carefully prepared, and in a state of minute division—otherwise the work will be imperfectly done, and much of the labour lost. The three species of turnips usually cultivated are the *White Globe*, which ripens early, and gives a full crop; the *yellow*, which has the advantage of being more hardy, and is usually intended to follow the other; and the Swedish turnip, or *Ruta baga*. The time of sowing varies with the different varieties, the Swedish and the yellow being put in before the white.

The valuable nature of the turnip crop makes it the more to be regretted that several enemies to its growth and perfection are manifested in different stages of its progress. The greatest obstacle in the way of the turnip grower is the insect *Chrysomela saltatoria*, or turnip-fly. The disease called the canker is produced by another insect, *Tenthredo oleracea*, especially dreaded in the county of Norfolk, where in the course of a day or two, on the prevalence of a north-east wind, whole fields are not unfrequently covered with it. After turnips have made some progress, the black caterpillar commences its work of depredation, nor are the operations of the gray caterpillar, in certain situations, less formidable than any of the others.

The means that have been adopted at different times for the prevention of this evil are almost too numerous to mention; but we are not justified in attributing to any of them complete, or even very considerable success. Some agriculturists have endeavoured to save their crops from ruin by steeping the seed in train-oil, linseed-oil, or some similar fluid for twenty-four hours, then mixing it with finely-sifted earth, and immediately depositing it in the drill. Others have sown their land with quicklime, vegetable-ashes, soot, or barley-chaff, or sprinkled it with lime-water, tobacco-water, &c. The practice of rolling the ground with a heavy roller during the night, when the insects come forth, has been also adopted. It has been suggested that, as the radish leaf is preferred by the slug to that of the turnip, a little of the latter should be sown along with the turnips, and as the radishes make their appearance first, there would be a chance of escape for the main crop; but this suggestion has been little followed.

Rape has become of late years a generally-cultivated field production, being valuable not only for the oil expressed from it, but also for feeding sheep on land not well adapted for growing turnips. It is cultivated on a variety of soils after paring and burning, and, when old, grass lands are brought into cultivation. The preparation and after-culture of the soil are the same as is required for the turnip, and on lands kept under plough it comes into rotation as a green crop.

The cultivation of this plant is extensively carried on in Flanders, chiefly for the sake of the oil obtained from the seed. After the oil is withdrawn, the husk is made into cakes, or sold as dust, and forms an important manure. Rape may be sown from the 24th of April to the 8th of June. If sown earlier it is apt to run to seed. From two to three pounds per acre is required, sown with the common turnipdrill; but, as rape-seed is much larger than turnip, the drill should be wider. When hoed, the rape should be set out at the same distance as turnip plants. The drills should be from twenty-six to twenty-eight or thirty inches, according to the quantity of manure given. As many ploughings, harrowings, and rollings should be given as may be necessary to make the soil as fine as possible. It is not so much the value of the green crop as the great certainty of a valuable crop of wheat that merits attention. The sheep are put on from the beginning to the middle of August; they must have the rape consumed by the middle or, at the latest, the end of September, so that the wheat may be sown before the autumnal rains take place.

Where mangel-wurzel is cultivated, the crop will be found to require hoeing and attention during the present month, as will also the crops of peas, beans, carrots, cabbage, &c. In former times the latter part of the month was employed in many parts of the country in

sowing a crop which has now gone almost out of cultivation: this consisted of the plant called buck-wheat, or brank. It has no natural affinity with wheat, and the seeds are never used in England as human food. The grains bear some resemblance in shape to the mast or nuts of the beech-tree, hence the plant is called, in Germany, beech-wheat. Buck-wheat is a handsome-looking annual plant, with branched, herbaceous stems, long arrow-shaped leaves, and purple flowers. It is a plant of rapid growth, and is said to ripen its seeds within one hundred days of the time it is sown. It will thrive on any soil, and yields a large increase. It is principally used as green food, all animals being fond of it, and thriving upon it. It is said greatly to improve the quality of the milk when cows are fed with it, and it has the advantage of bearing heat well, so that this crop continues green when all the grasses of the meadows are burnt up. One of the uses to which buck-wheat is applied is the feeding of pheasants in game-preserves during winter. Sometimes the grain is sown and left standing, that both food and cover may be afforded to the birds; at other times, the straw is taken unthreshed, and left in heaps where the birds resort. They are extremely fond of this food, seldom ramble when it is afforded them in plenty, and will often allure others to come and partake with them. When buck-wheat is used as food for horses or pigs, it is necessary previously to crush the grain. Bees are much attracted by the blossoms of this plant, and the honey thus obtained is said to be superior to every other both for flavour and transparency. In some parts of the United States buck-wheat is greatly esteemed, and much cultivated. When finely ground it is made into cakes, somewhat resembling our crumpets, which are eaten hot, throughout the winter season. The flour is made into a batter of moderate consistency, by the addition of water; it is then left to ferment a little, but not to become actually sour, after which it is poured upon the griddle, and, when sufficiently baked, is taken at once to the table, buttered, and eaten hot, with the addition of a little honey. In most of the settlers' houses, the dish of batter, and the griddle, may be seen standing in a corner of the fire-place from one week's end to another, as it is customary to have these cakes at every meal. Nor are they confined to the poorer classes, for the middle and higher orders are found to patronize them, and hotel and tavern keepers find them in constant request during the cold season.

The middle of this month is a season of busy occupation in hemp and flax-growing districts, though these products are now much less cultivated in England than they were at a former period of our history. The culture of hemp is considered of so much importance by our legislators that premiums have been offered to encourage it, not only in this country but in our colonial possessions; but these have not been effectual in greatly extending its growth, as it can be imported from Russia and other countries of the north of Europe, much below the price at which our farmers can produce it. The following is the substance of an account of its cultivation in Dorsetshire:—It is usually sown about the 15th of May, on the best arable land, on which about twenty cart-loads of good manure have been spread, say about a ton to the load; this is ploughed in, and the ground well ploughed two or three times, and well dragged and harrowed, to get the soil as fine as possible, and about two bushels or two bushels and a half of seed sown to the acre; that which produces no seed, called summer-hemp, or cinner-hemp, is drawn about five or six weeks after the plant comes up; it is at that time in blossom. When drawn, it is tied up in bundles and carried to some meadow land, and there spread to ripen; when ripe and dry it is bundled, and heckled. That which stands for seed has no flower that can be discerned; it is generally ripe early in September, when it is drawn, bundled up, and stowed up in the field to dry and harden, when it is threshed out in the fields. Most commonly in Dorset the seed is sold upon the spot at from 2*s.* 6*d.* to 7*s.* the bushel: an acre of hemp produces eighteen or twenty bushels. In Somersetshire the produce in seed is sometimes thirty bushels per acre. When threshed, the hemp is carried to the meadows and spread to ripen as the other, and stacked in the same way to prepare it for sale. It is sent to the houses of the poor in the neighbourhood, to be scaled or stripped of its outside rind or back, which is the valuable part, the remainder being allowed to the poor as fuel. Old men, women, and children are employed in the scaling, but there is often much waste from improper management, and the difficulty of getting this process properly attended to, has stood much in the way of the successful cultivation of hemp. An acre of hemp in a good season will produce fourteen, sixteen, or eighteen weights, of thirty-two pounds to the weight. This is in Dorsetshire; in Somersetshire they reckon their weight two pounds less.

CONTAGION IN AN INDIAN VILLAGE

There came unto my father's hut
A man, weak creature of distress;
The red-man's door is never shut
Against the lone and shelterless;
And when he knelt before his feet,
My father let the stranger in;
He gave him of his hunter's meat,—
Alas! it was a deadly sin!

The stranger's voice was not like ours,
His face at first was deadly pale;
Anon 'twas like the yellow flowers,
Which tremble in the meadow gale.
And when he laid him down to die,
And murmured of his father-land,
My mother wiped his tearful eye,
My father held his burning hand!

He died at last—the funeral yell
Rang upward from his burial sod;
And the old powwah* knelt to tell
The tidings of the white man's God.
The next day came,—my father's brow
Grew heavy with a fearful pain;
He did not take his hunting-bow—
He never saw the woods again!

He died, even as the white man died—
My mother, she was smitten too—
My sisters vanished from my side,
Like diamonds from the sunlit dew.
And then we heard the powwahs say,
That God had sent his angel forth
To sweep our ancient tribes away,
And poison and unpeople earth.

And it was so—from day to day
The spirit of the plague went on;
And those at morning blithe and gay
Were dying at the set of sun.
They died: our free, bold hunters died—
The living might not give them graves,
Save, when along the water-side,
They gave them to the hurrying waves.

The carrion-crow, the ravenous beast,
Turned loathing from the ghastly dead;
Well might they shun the funeral feast
By that destroying angel spread!
One after one the red men fell;
Our gallant war tribe passed away;
And I alone am left to tell
The story of its swift decay!—Whittier.

* Powwah,—or powaw, as it is written by Webster,—a priest.

LONDON:
JOHN WILLIAM PARKER, WEST STRAND.
Published in Weekly Numbers, Price One Penny, and in Monthly Parts, Price Sixpence.
Sold by all Booksellers and Newsvenders in the Kingdom.

THE

Saturday Magazine.

No. 633. MAY 14TH, 1842. Price One Penny

A VOYAGE DOWN THE DANUBE. I.

ULM.

The exhaling sun, the vapour-burden d air,
The gelid mountains, that to rain condensed
These vapours in continual current drew,
And send them, o'er the fair divided earth,
In bounteous rivers to the deep again,
A social commerce hold, and firm support
The full adjusted harmony of things.—THOMSON.

THE Danube cannot probably in any part of its course boast of such a series of grand and lovely views as is presented by the Rhine between Bingen and Coblenz. Yet the Danube has its peculiar beauties, which serve to distinguish it from its more favoured rival—it has its vast forests, feathering down to the water's edge from the summits of high mountains which confine the river on both sides; and in addition to the picturesque ruins of ancient castles, it is diversified with numerous monasteries, which appear like the abodes of powerful princes, so great is their extent and splendour.

A blending of all beauties, streams, and dells,
And chiefless castles, breathing stern farewells,
From gray but leafy walls, where ruin greenly dwells.

In historical associations the Danube does not yield to the Rhine. It formed for a long time the frontier line of the Roman dominions: its valley has been the high road of the barbarous hordes of Attila, and of the armies of Charlemagne, Gustavus Adolphus, Solyman the Magnificent, Marlborough, and Napoleon: its shores have re-echoed at one time with the hymns of the pilgrims of the cross, and, at another, with the enthusiastic shouts of the turbaned followers of Mahomet; and its waters have been dyed in turn with the blood of Romans, Huns, Germans, Swedes, Turks, French, and English.

The Danube, called by the Germans Don-au, or the thundering river, and by the Hungarians Duna, though inferior to the Volga in point of extent, may in consequence of its central position be considered the first river in Europe. There is, however, as much contention respecting the origin of its name as that of the spring from which it derives its source. It was called by the ancients, from its sources to Vienna, *Danubius*, and lower down *Ister*. Some writers pretend that it borrows its appellation from the numerous heathen altars that were erected on its banks, and consecrated by the Romans to Diana Abnoba. With regard to the source, the German geographers contend, with the greatest show of probability, that it originates on the eastern declivity of the Black Forest, about twenty-four miles from the banks of the Rhine, in 48° 6′ north lat., and 8° 9′ east long., at an elevation of about 3000 feet above the level of the sea. It is here a mountain torrent called Breghe. Near Donauschingen it is joined by another mountain stream, after which junction it receives the name of Donau or Danube. In the castle-yard of the Prince Fürstenburg, Donauschingen, in Baden, a tiny spring which can be covered with the palm of the hand, is shown as the source of the mighty Danube. During its tortuous progress it receives the waters of not less than 150 rivers and rivulets; it washes the shores of Würtemburg, Bavaria, Austria, Hungary, and Turkey, and thus drains a surface, which probably exceeds 300,000 square miles, until at length it empties itself by four mouths into the Black Sea, at a distance of about 1770 miles from its source. Throughout nearly the whole of this route, the river is walled in by two chains of mountains, and the roaring of the water, as it breaks over its rocky impediments,

may be heard at a considerable distance. The expanse of water is so great between Vienna and Belgrade that it has frequently been the scene of naval combats between Christians and Turks.

But the navigation of this river bears no proportion to its rank and size, partly owing to the rapidity of its currents, the frequent interruptions of gulfs, shoals, whirlpools, &c., which render it somewhat difficult; but more than this, through the absence of a circulating commerce along its banks, and the want of enterprise on the part of the inhabitants to use it as an outlet for the productions of the countries which it traverses. The vessels hitherto committed to it, previous to the year 1830 (when a steamer was first launched on the river at Vienna), consist almost exclusively of barges, constructed of unpainted planks, slightly attached so as to hold together in a descending voyage, but rarely capable of ascending, and valued only as so much planking, to be broken up on reaching its destination. Being intended almost exclusively for the conveyance of merchandize, the accommodation of travellers is scarcely studied; and hence, compared with those of the Rhine, the number of Danube tourists, guide-books, picturesque views, &c., has hitherto been very limited.

At Ulm, the Danube, reinforced by its powerful allies, the Iller and the Blau, becomes navigable—and here our voyage commences: but we will first notice a few of the remarkable objects of this the frontier town of Würtemburg. It is situated on the left bank of the Danube, the right being Bavaria. It contains 14,000 inhabitants, and has some small pretensions to trade and manufacture: the most important articles of its exports are grits and snails: the latter are fattened in the surrounding districts, packed into casks by thousands, and exported to Austria and other Roman Catholic countries, where they are prized as a great delicacy for the table, especially during Lent. The species of snail thus reared is the *Helix pomatia* of naturalists, and it is calculated that upwards of four millions are annually exported. A large number of tobacco-pipe heads are also made here.

The streets of Ulm are narrow and badly paved. The town was once strongly fortified and suffered severely at different periods. The fortifications are now entirely dismantled and turned into a promenade. Ulm is ingloriously distinguished by being the scene of General Mack's shameful capitulation, in 1805, when the garrison, consisting of 26,000 men, laid down their arms, and the whole of the magazine, 60 cannons, and 3000 cavalry horses fell into the hands of the victor. On surrendering to Napoleon, this unsoldier-like General, made an absurd apology for his master, the Emperor, by saying that he had been compelled to declare war by Russia and England; upon which Napoleon, with much tact, answered, "That being the case you are no longer one of the powers of Europe!"

The most interesting object in Ulm is the minster, one of the six finest Gothic cathedrals in Germany. Though unfinished, it is a majestic and remarkable edifice: it was begun 1377, and continued down to 1488. It was erected entirely at the expense of the citizens, without the aid of contributions from abroad, papal indulgencies, or remission of taxes, to which so many other similar edifices owe their origin. The architect was Matthew Ensinger, and his effigy may be seen on the tower, a masterly structure, 237 feet high, left unfinished, owing to a subsidence, hardly perceptible externally, which took place in the foundation while it was in progress. Had the plan been completed, it would have been 491 feet high. The view from the top extends to the memorable fields of Blenheim and Hochstadt, and in the foreground it commands the field of operation of the Austrian and French armies, in 1805. An engraved tablet commemorates a feat of strength of the Emperor Maximilian, who stood with one foot on the parapet and balanced a wheel aloft in the air on the other. The body of the church surpasses in dimensions every other in Germany, being 416 feet long, 166 feet wide, and 144 feet high: it has *five* aisles. The nave is rather bare and naked, but the effect of the vast number of pillars is grand. In the choir are several windows of rich painted glass, executed 1480. Interesting also is the carved work in the stalls, font, stone pulpit, and tabernacle. Near the sacristy is a singular arch, formed by interlacing branches rising from the trunk of a tree, and meeting above.

Passage-boats called *ordinari*, start from Ulm once a week, during the summer months, or as long as the river continues free from ice. These boats have a hut of rude planks run up in the centre of the vessel, which is intended rather to protect the merchandize from wet, than to accommodate the passengers. A small part only is allotted to their use, which they are often compelled to share with very low company, among sacks, casks, and bales. As the vessel has no deck, the passengers must recline upon the sloping roof, or sit confined in the narrow space at one end, called the cabin, the furniture of which is limited to a plank for a table, and two long boards, supported by casks, for seats. This unwieldy machine is slowly set in motion, after much vociferation among the boatmen, and the propelling force consists of very large oars, each pulled by six or seven men, and occasionally by a greater number, as some of the poorer class of travellers commonly agree to work their passage down the river. This voyage, too, is proverbial for delays, arising from running upon sand-banks, and the detention by the Austrian custom-house officers. The progress is also delayed by mists, which towards autumn lie very thick on the river, and are seldom dissipated until the sun is high. But the principal cause of most of the vexatious delays proceeds from the wind: a very slight gust is a sufficient excuse for the unskilful and timid boatman to make for the shore, where he will often lie moored for days together: this is called "keeping the wind's holiday." The traveller, therefore, will require not only a stock of patience, but also of provisions, since the boatman's fare is scanty and coarse. During one of these delays, Mr. Spenser, and a party of travellers, attempted by night to reach the nearest village. After walking for a considerable distance, over swampy ground, he reached an inn which was little better than an English hedge alehouse, and the landlord's provisions were already consumed by previous guests.

There are other, and even worse, modes of descending the Danube, viz., by rafts and barges. The former constitute one of the most objectional modes of conveyance; they are very slow, most liable to detention, carry the worst company, afford least accommodation, and are not unfrequently dangerous. The barges are of various sizes; they are formed of rough planks, flat-bottomed, and no keel: they are steered by huge paddles, formed of the stem of a tree, with a board attached to the end immersed in the water, and thus the craft is kept within the influence of the stream.

The best mode of descending the river is by a private boat. This is furnished with a cabin of rough planks, capable of holding a carriage and six persons, besides three boatmen; but for those who are less encumbered a smaller boat will suffice. Those usually hired are flat-bottomed, and furnished with an awning of matting. Such a boat requires two rowers, and if well supplied with provisions, the traveller has little to fear but the wind. "If it be high, and at all contrary, the Danube boats, from their clumsy construction, can make no headway at all; and they are at the same time so difficult to steer, that the voyage in stormy weather is not unattended with danger. A keelless vessel stands but a very poor chance against the sudden puffs and currents of air which descend without the slightest warning from the side valleys and gulleys, at right angles with the river."

But all these objections to a voyage down the Danube are giving way to the steam-boat. The Austrian steam-boat company have within the last few years navigated the Danube, between Vienna and the Black Sea, and a Bavarian company is probably now affording, between Ratisbon, Passau, and Linz, facilities which may tempt many a traveller from the Rhine; or if he prefer it, he may visit both rivers, by proceeding from Strasburg to Baden, through the Black Forest to Donauschingen, and having witnessed the reputed birth place of the giant Hood in the court-yard of the Prince of Fürstenburg, he may follow its course by the post road to Ulm, or reach this place by Carlsruhe and Stuttgart, and embark at once for Vienna. Should he not care to proceed further down the stream, the return by Salzburg and Munich, or through the Tyrol to the Lake of Constance, and so down the Rhine, leaves nothing, as Mr. Planché remarks, to be wished for in point of scenery; and provided the weather be favourable, six or eight weeks are amply sufficient for the whole journey.

The voyage from Ulm to Ratisbon does not present much to interest the traveller, as the banks of the river are for the most part level, and therefore devoid of picturesque effect. The chateau of Boffingen first attracts attention, and lower down, Elchingen, formerly a rich Benedictine monastery, and made in 1805 the head quarters of Napoleon. Falheim and Leipheim are next pointed out to the tourist as the towns where the snails (before mentioned) are bred and fattened. Lauingen, a town of 4000 inhabitants, boasts of having produced the most learned man, the most beautiful woman, and the largest horse:—portraits of these reputed prodigies are to be seen in the watch-tower. Dillengen and Höchstadt next become visible, and then, close to the river, Blenheim, the scene of the famous victory gained, in 1704, by Marlborough and Prince Eugene over the French and Bavarians. Lower down Donauworth appears n sight formerly a free imperial city, but now an unimportant provincial town. After passing some places of little note, and among the rest the picturesque town of Neuberg, a level moor of great extent occupies both banks of the river, and renders the voyage dull and uninteresting till we reach Ingoldstadt, when the remembrance of the university in which the celebrated Dr. Faustus studied, and other associations connected with this ancient town, induce a look of interest towards it. At Neustadt the scenery greatly improves. The Danube rushes through a grand and gloomy defile, formed by perpendicular cliffs or rocks overhanging the water. Further on the river makes an abrupt bend, and at the extremity of the defile it passes the small town of Kellheim, and there receives the waters of the Altmühl. Kellheim is likely to acquire importance from its being situated at the mouth of the canal, which is in the course of being formed, to unite the Danube with the Maine, through the Altmühl and the Rednitz. This is the last place we need notice previously to arriving at Ratisbon.

SPARE MINUTES.

MEDITATED RESOLVES AND RESOLVED MEDITATIONS.

When children meet with primroses, nuts, or apples in their way, I see those pleasures are ofttimes occasions to make them loiter in their errands, so that they are sure to have their parents' displeasure, and ofttimes their late return finds a barred entrance to their home; whereas those who meet with dangers in the way, make haste in their journey, and their speed makes them welcomed with commendation. Nature hath sent me abroad into the world, and I am every day travelling homeward. If I meet with store of miseries in my way, discretion shall teach me a religious haste in my journey. And if I meet with pleasures, they shall pleasure me only by putting me in mind of my pleasures at home, which shall teach me to scorn these, as worse than trifles. I will never more reckon a troublesome life a curse, but a blessing. A pleasant journey is dear bought with the loss of home.

When I see the fisher bait his hook, I think on Satan's subtle malice, who sugars over his poisoned hooks with seeming pleasures. Thus Eve's apple was candied with divine knowledge, *ye shall be as gods, knowing good and evil.* When I see the fish fast hanged, I think upon the covetous worldling, who leaps at the profit without considering the danger. Thus Achan takes the gold and the garment, and never considers that his life must answer it. If Satan be such a fisher of men, it is good to look before we leap. Honey may be eaten, so that we take heed of the sting: I will honestly enjoy my delights, but not buy them with danger.

I see, when I have but a short journey to travel, I am quickly at home, soon out of the pain of my travel, soon into the possession of my rest. If my life be but my walk, and heaven my home, why should I desire a long journey? Indeed knowing my home so pleasant, I would not be weary with a long walk, but yet the shorter my journey the sooner my rest.

I cannot see two sawyers work at the pit, but they put me in mind of the Pharisee and the Publican; the one casts his eye upward, whilst his actions tend to the pit infernal: the other standing with a dejected countenance, whilst his hands and heart move upward. 'Tis not a shame to make show of our profession, so we truly profess what we make show of: but of the two, I would rather be good and not seem so, than seem good, and not be so. The Publican went home to his house rather justified than the Pharisee.

When I think on the eagle's carrying up of the shell-fish into the air, only to the end he may break him by his fall, it puts me in mind of the devil's costly courtesies, who, out of the bounty of his subtility, is still ready to advance us to destruction. Thus more than once he dealt with my Redeemer; no sooner had he raised him to the top of an high pinnacle, but straight follows, *cast thyself down;* and having placed him on an high mountain, let him fall down and he shall be largely rewarded with his own. If advancement be so dangerous, I will take heed of being ambitious. Any estate shall give me content: I am high enough if I can stand upright.

When I see leaves drop from their trees in the beginning of autumn, just such, think I, is the friendship of the world. Whilst the sap of maintenance lasts, my friends swarm in abundance; but in the winter of my need, they leave me naked. He is an happy man that hath a true friend at his need: but he is more truly happy that hath no need of his friend.

I should wonder, that the unsatiable desires of ambition can find no degree of content, but that I see they seek a perfection of honour on earth, when the fulness of glory is only in heaven. The honour on earth is full of degrees, but no degree admits a perfection: whereas the glory of heaven admits of degrees, but each degree affords a fulness. Here, one may be lower than another in honour, and yet the highest want a glory: there, though one star differs from another in glory, yet in the fulness of glory they all shine as stars. Here the greatest may want, there the least hath enough: here, all the earth may not be enough for one; there, one Heaven is enough for all. Lord, let me rather be least there, without honour here, than the greatest here, without glory there. I had rather be a door-keeper in that house than a ruler in these tents.

When I see the heavenly sun buried under earth in the evening of the day, and in the morning to find a resurrection to his glory, why (think I) may not the sons of heaven, buried in the earth, in the evening of their days, expect the morning of their glorious resurrection? Each night is but the past day's funeral, and the morning his resurrection: why then should our funeral-sleep be other than our sleep at night? Why should we not as well awake to our resurrection, as in the morning? I see night is rather an intermission of day than a deprivation, and death rather borrows our life of us than robs us of it. Since then the glory of the sun finds a resurrection, why should not the sons of glory? Since a dead man may live again, I will not so much look for an end of my life, as wait for the coming of my change.

[Arthur Warwick, 1637.]

MEMOIR OF SIR T. STAMFORD RAFFLES.

I.

The life of Sir Thomas Stamford Raffles affords the interesting example of an active-minded man sedulously engaged in effecting a large amount of good to his fellow-creatures, and likewise suffering with patient cheerfulness and submission all the calamities which befel him.

Thomas Stamford Raffles was born at sea, in July, 1781, and was the only surviving son of Benjamin Raffles, one of the oldest captains in the West Indian trade out of the port of London. Little is known of his family more than that his paternal grandfather held a situation in the Prerogative Office, Doctors' Commons. In his childhood and in early youth he displayed a thoughtfulness and a closeness of application beyond his age. He was for about two years at an academy at Hammersmith, where he received the only regular and systematic education that ever fell to his lot. At the age of fourteen, he was removed to the situation of an extra clerk in the East India House. He afterwards much regretted the deficiency thus occasioned in his early education, and endeavoured to mitigate the effects of it by devotion during his leisure hours to favourite and useful studies.

The study of natural history and of languages seems to have remarkably coincided with the natural bias of his mind and talents; but still with a thorough sense of the propriety and necessity of resigning himself to the duties which had been set in his path, his attention to the routine of the office was patient and unremitting: he worked early and late at the desk, and by his extra labour earned a small addition to his salary. His parents were in difficulties, and all his little gains were carried home for their relief.

His abilities now began to be noticed by those who had the power to reward them, and on a vacancy occurring he was put upon the establishment in preference to several others. In 1805, the Court of Directors determined to form an establishment on Pulo-Penang, or Prince of Wales's Island. This appointment was peculiarly suitable to the genius and temper of Mr. Raffles, and in September, 1805, being in his twenty-fourth year, he arrived in Penang. During the passage out, by intense study, he had not only acquired the Malay language, which is the common dialect of almost all the Eastern islands, but had made himself intimately acquainted with the history, statistics, and interests of the British possessions in the East, and more particularly of the island-states and governments. Hence, after arriving at his destination, he was soon found to be the most useful person on the establishment, being the only individual who was capable of personally conducting the intercourse with the natives. In the following year, 1806, he was appointed chief secretary, his predecessor having been raised to the dignity of councillor. Raffles was about this time likewise made registrar to the new court of judicature.

But the fatigue and responsibility of organising a new government in such a wretched climate as that of Penang, which had already proved fatal to very many of the settlers, brought on an alarming illness, which made it advisable that he should proceed to Malacca for the recovery of his health. Here he had opportunities of associating with the varied population congregated from all parts of Asia, whether insular or continental, and the knowledge he obtained from these strangers of the nature and extent of their several resources, of their trade, their customs, manners, and feelings, became of infinite service to him in the high and responsible situations he was shortly destined to fill.

It is remarkable that at this time orders had been issued for demolishing the fortifications of Malacca, and destroying the public buildings, with the view of deterring Europeans from establishing themselves there, and of transferring the trade and population to Penang. This island is situated in the Strait of Malacca, which lies between Malaya and Sumatra. Taking all things into consideration, the impolicy of this measure was made so evident by the representations of Raffles in the proper quarter, that the orders were countermanded.

About this time, likewise, he came under the notice of the late Lord Minto, in consequence of Dr. Leyden showing his lordship, who was then Governor-General, Raffles's correspondence on Malayan language and literature, and other subjects connected with the Eastern Archipelago. Lord Minto being much pleased with the talent and intelligence shown by Raffles, commissioned Leyden to say to his friend, that he should be gratified in receiving directly from himself any communications respecting the eastern parts of the Indian seas. So satisfactory was the epistolary intercourse that ensued, that his lordship after a time hinted an intention of placing his correspondent in the government of the Moluccas, which in the year 1810 had fallen into our hands. This suggestion induced Mr. Raffles to proceed to Calcutta, where he was received with the greatest kindness and attention by Lord Minto.

It so happened that, about this time, the annexation of Holland to France had placed at the disposal of Buonaparte all the valuable and extensive possessions of the Dutch in the Eastern seas, of which Java was the great central point, whence operations were most likely to be effectively organized against the political ascendancy and the commercial interests of England. It seems that the apprehension of views of this nature arose or existed simultaneously in the minds of the Governor-General and Mr. Raffles, so that, on Raffles referring to Java, Lord Minto observed, "Yes, Java is an interesting island; I shall be happy to receive any information you can give me concerning it." A memoir of such ability and statesman-like research was hereupon presented by Raffles to the Governor, that his lordship determined to take upon himself the responsibility of reducing Java under British dominion. In consequence of Raffles's advice being in a great measure followed,

in the conduct of the expedition, it was attended with complete success: the island was added to our colonial sway, and Raffles was immediately named "Lieutenant-Governor of Java and its Dependencies*."

About this time his friend Leyden died, whose aid he had looked forward to with great delight, in the government of the island of Java. But he had no time to indulge in vain regrets. The Dutch had brought Java, before it fell into the hands of the English, to a miserable condition. The new ruler at once set about the organization of his government, keeping always in view, as the chief object of his labours, the happiness of the people over whom he was placed. With skill and judgment he corrected many of the errors which had crept into the departments of commerce, revenue, and judicature; he instituted statistical inquiries and surveys; he sent residents to every native court, and established benevolent societies and schools in various quarters: he likewise held out encouragements for the prosecution of every branch of industry and learning. His endeavours to abolish the scourge of slavery were not the least part of his exertions for the good of Java.

Attached and obedient to him as the islanders in general became, Mr. Raffles had great difficulties to encounter. Insurrections were raised, but by active measures tranquillity was restored, and the disturbers of it punished. Governor Raffles was equally energetic in war as in peace; and such occurrences only tended to exhibit more fully his activity and talents, and always ended in the substitution of a better state of things where discord had formerly prevailed. The condition of the revenue alone sufficed to show the island's prosperity under Raffles: from four millions of rupees it had increased to thirty millions, within a few years.

When Holland again became independent, the restoration of the Dutch dependencies in the East took place, and among the rest of Java. Lord Minto, who had foreseen this event, had wished to appoint Mr. Raffles to the residency of Bencoolen: but the failing health of the latter caused him to wish to visit England. On the arrival therefore of the Dutch in Java, he took his passage in a vessel bound for Britain. But he was not permitted to leave the island without experiencing such marks of gratitude as were due to one who had introduced peace and prosperity into a land of misgovernment and oppression. A magnificent service of plate was presented to him by the native and European residents at Batavia, which was the seat of government; and on the morning of his embarkation the water was covered with boats, filled with people of various nations, all anxious to pay the last tribute of respect in their power to one for whom they entertained the most lively affection. We are told that, on reaching the vessel, he found the decks covered with offerings of every description—fruits, flowers, poultry,—whatever was thought likely to promote his health and comfort on the voyage.

Mr. Raffles landed safely in England, where his temporary stay was marked by three important events. He engaged himself in marriage with Miss Sophia Hull, a lady of the most amiable character, who lived to lament his death, and to record his deeds. He likewise published his *History of Java*, which we shall have occasion hereafter to refer to, a work which enlightened Britain on a subject of great interest, and on which we had been previously in a state of comparative ignorance. He also received the honour of knighthood from the hands of the Prince Regent, as a mark of the esteem in which his services were held by the nation.

Before he set out for Bencoolen, in Sumatra, of which the Court of Directors had named him "Lieutenant-Governor," thus confirming Lord Minto's provisional appointment, Sir Thomas, merely from motives of benevolence, visited Holland, for the purpose of making representations to the Dutch king and his ministry, respecting the general welfare and administration of the Isle of Java. He received promises which were never fulfilled: ere much time had gone by Java was once more the scene of misrule, though it is hoped that the seeds of good, sown by the English governor, will never be entirely eradicated.

In another paper we shall follow Sir Thomas to Sumatra, and take a survey of the remaining part of his valuable and useful life.

* We may here state our intention of presenting the reader with a short series of articles on JAVA AND THE JAVANESE, to which the present Memoir of Sir Stamford Raffles affords an appropriate introduction.

BE not too slow in the breaking of a sinful custom; a quick, courageous resolution is better than a gradual deliberation: in such a combat, he is the bravest soldier, that lays about him without fear or wit. Wit pleads; fear disheartens; he that would kill Hydra, had better strike off one neck than five heads: fell the tree, and the branches are soon cut off. —QUARLES.

THE father of that eminent lawyer, Serjeant Glanvil, had a fair estate, which he intended to settle on the latter's elder brother; but he, being a vicious young man, and there appearing no hopes of his recovery, he settled it upon *him*, that was his second son. Upon his death, his eldest son, finding that what he had before looked on as the threatenings of an angry father, was now but too certain, became melancholy; and that, by degrees, wrought so great a change on him, that what his father could not prevail in while he lived was now effected by the severity of his last will; so that it was now too late for him to change in hopes of an estate that was gone from him. But his brother, observing the reality of the change, resolved within himself what to do: so he called him, together with many of his friends, to a feast; and, after other dishes had been served up to the dinner, he ordered one that was covered to be set before his brother, and desired him to uncover it; which he doing, the company was surprised to find it full of writings. So he told them, that he was now to do what he was sure his father would have done, if he had lived to see that happy change which they now all saw in his brother: and, therefore, he freely restored to him the whole estate.—BURNET's *Life of Sir Matthew Hale.*

CORAL ISLETS.

THERE is, however, no feature in the scenery of this coast that strikes the European observer as more novel and lovely than the verdant islets, or motus, which strew the expanse of smooth sea between the barrier reef and the main land. They are composed entirely of coral; are raised scarcely three feet above the level of the surrounding water; and appear to be peculiar to the barrier reef. They are most usually based upon the shoals which constitute the lateral boundaries of the reef apertures. It is probable that they are formed from mature coral shoals, which, after they had been raised to the surface of the sea, had caused the water to recede from their centre by the increase and elevation of their circumference; the near approach to a circular form they invariably present, being in favour of this supposition.

A motu may occasionally be seen in an incipient state, a shoal with little depth of water, projecting but a few superficial feet of its centre above the sea, rocky, and covered with two or three stunted bushes struggling for existence, affording a structure intermediate to an inundated shoal and a complete islet. The more extensive and ornamental motus possess some rich vegetable mould, covered with brushwood, or with cocoa-nut and other litoral trees. They are destitute of fresh water, and none of them are inhabited, excepting by occasional visiters from the main land, who repair hither for the benefit of the purer sea air when suffering from sickness.—BENNETT's *Whaling Voyage.*

MANY unhappy persons seem to imagine that they are always in an amphitheatre, with the assembled world as spectators; whereas, all the while, they are playing to empty benches. They fancy, too, that they form the particular theme of every passer-by. If, however, they must listen to imaginary conversations about themselves, they might, at any rate, defy the proverb, and insist upon hearing themselves well spoken of.—ANON.

THE INFLUENCE OF THE GREAT.

IT is a most notorious thing, both to reason and in experience, what extreme advantage great persons have, especially by the influence of their practice, to bring God himself, as it were, into credit: how much it is in their power easily to render piety a thing in fashion and request. For in what they do, they never are alone, or are ill attended; whither they go, they carry the world along with them: they lead crowds of people after them, as well when they go in the right way, as when they run astray. The custom of living well, no less than other modes and garbs, will be soon conveyed and propagated from the court; the city and country will readily draw good manners thence, (good manners truly so called, not only superficial forms of civility, but real practices of goodness,) for the main body of men goeth not according to rules and reasons, but after examples and authorities, especially of great persons, who are like stars, shining in high and conspicuous places, by which men steer their course: their actions are to be reckoned not as single or solitary ones, but are, like their persons, of a public and representative nature, involving the practice of others, who are by them awed or shamed into compliance. Their good example especially hath this advantage, that men can find no excuse, can have no pretence why they should not follow it. Piety is not only beautified, but fortified by their dignity; it not only shines in them with a clearer lustre, but with a mightier force and influence: a word, a look, the least intimation from them will do more good, than others' best eloquence, clearest reason, most earnest endeavours. For it is in them, if they would apply themselves to it, as the wisest prince implies, to *scatter iniquity with their eyes.* A smile of theirs were able to enliven virtue, and diffuse it all about; a frown might suffice to mortify and dissipate wickedness. Such apparently is their power of honouring God, and in proportion thereto surely great is their obligation to do it: of them peculiarly God expects it, and all equity exacts it. What the meaner rank of servants do is of some consequence indeed, but doth not import so much to the master's reputation. Their good word concerning him, their good carriage toward him doth not credit him so much. But those whom he employs in matters of highest trust and importance to his affairs, whom he places in the nearest degree to himself, (seats even in his own throne, upon his own tribunal,) whom he feeds plentifully and daintily, maintains in a handsome garb, allows largely, as their department doth much reflect on their lord's esteem, as they are highly capable of advancing his repute; so all the rules of ingenuity and gratitude, all the laws of justice and equity do oblige them earnestly to endeavour it. And it is indeed no less their concernment to do so. For if there be disorders, prejudicial to the master's honour and interest, frequently committed in the family, it is those servants must be responsible: if due order be there kept to his glory and advantage, they shall chiefly be commended, and peculiarly bear the *Euge, bone serve!* They must be loaded with other men's faults, or crowned for other men's virtues, as their behaviour hath respectively contributed to them. Those universal rules of equity proposed in the Gospel, will, in God's reckoning with and requiting men, be punctually observed; to whomsoever much is given, of him much shall be required: answerable to the improvement of what is delivered in trust shall the acceptance be. —BARROW.

BODY and mind must be exercised, not one, but both, and that in a mediocrity; otherwise it will cause a great inconvenience. If the body be overtired, it tires the mind. The mind oppresseth the body, as with students it oftentimes falls out, who, as Plutarch observes, have no care of the body, but compel that which is mortal to do as much as that which is immortal; that which is earthly as that which is ethereal. But as the ox, tired, told the camel, both serving one master, that refused to carry some part of his burden, before it were long, he should be compelled to carry all his pack, and his skin to boot, which by and by, the ox being dead, fell out, so the body may say to the soul that will give it no respite or remission. A little after, an ague, vertigo, or consumption seizeth on them both; all his study is omitted, and they must be compelled to be sick together. He that tenders his own good estate and health, must let them draw equal yoke both alike, that so they may happily enjoy their wished health.—BURTON.

A SCENE ON THE BANKS OF THE HUDSON.

COOL shades and dews are round my way,
And silence of the early day;
'Mid the dark rocks that watch his bed,
Glitters the mighty Hudson spread,
Unrippled, save by drops that fall
From shrubs that fringe his mountain wall;
And o'er the clear still water swells
The music of the Sabbath bells.

All, save this little nook of land
Circled with trees, on which I stand;
All, save that line of hills which lie
Suspended in the mimic sky—
Seems a blue void, above, below,
Through which the white clouds come and go;
And from the green world's farthest steep
I gaze into the airy deep.

Loveliest of lovely things are they,
On earth, that soonest pass away;
The rose that lives its little hour,
Is prized beyond the sculptured flower.
Even love, long tried and cherished long,
Becomes more tender and more strong
At thought of that insatiate grave,
From which its yearnings cannot save.

River! in this still hour thou hast
Too much of heaven on earth to last;
Nor long may thy still waters lie,
An image of the glorious sky.
Thy fate and mine are not repose,
And ere another evening close,
Thou to thy tides shalt turn again,
And I to seek the crowd of men.—BRYANT.

IN England there is a kind of science of good household-management, which, if it consisted merely in keeping the house respectable in its physical character, might be left to the effectual working out of hired hands; but, happily for the women of England, there is a philosophy in this science, by which all their highest and best feelings are called into exercise. Not only must the house be neat and clean, but it must be so ordered as to suit the tastes of all, as far as may be, without annoyance or offence to any. Not only must a constant system of activity be established, but peace must be preserved, or happiness will be destroyed. Not only must elegance be called in, to adorn and beautify the whole, but strict integrity must be maintained by the minutest calculation as to lawful means: and self, and self-gratification must be made the yielding point in every disputed case. Not only must an appearance of outward order and comfort be kept up, but around every domestic scene there must be a strong wall of confidence, which no internal suspicion can undermine, no external enemy break through.—ELLIS.

BY associating real events with fictitious terms we are sometimes tempted to ascribe to the latter a certain mysterious influence which practically invalidates the existence of a higher power. In all his researches into the phenomena of the world around him, and the laws by which they are regulated, the mere man of science directs his attention so exclusively to what he terms Nature, and the operations of Nature, that he at last begins to attribute to this delusive term an actual existence, and to ascribe to a word only, and a shadow, what he ought to ascribe to the being and to the agency of God. The word Nature is certainly a very convenient term for expressing the uniform action of the first Almighty cause, according to certain laws which in His wisdom he has enacted; but when by frequent repetition, we lose sight of the real meaning of the term, or, by associating it with the phenomena around us, we begin to give it an actual existence, then it is that we are encouraging the growth of a sceptical principle in the mind. By substituting in our speculations, Nature for God, we keep out of sight the Creator and Governor of the universe, till we finally doubt the reality of His providence and of His power.—RINWELL.

ON SPRINGS, WELLS, AND FOUNTAINS.

There are several resemblances which serve to connect the phenomena of rain, springs, rivers, wells, and fountains. It is true that we have many things yet to learn before the precise rationale of any of these phenomena will be known, but sufficient has been developed to enable us to take a rapid glance at the broad features of the subject.

Through the agency of heat a quantity of water—really enormous when considered with reference to the whole surface of the earth—is being constantly evaporated from the oceans, seas, lakes, and rivers, and becomes suspended in the atmosphere, in the form of invisible vapour. Conjectures have been made by some geographers as to the number of millions of cubic feet thus evaporated in a year; but the data for forming such conjectures are as yet too insufficient to be depended on. A decrease in temperature, the action of electricity, together with other agencies, has the effect of condensing this vapour into a visible mist which we recognize as cloud, fog, &c., and further of re-converting it into water as rain and dew, or into the icy form of hail, snow, and hoar-frost. As we have no reason for believing that there is more moisture in the whole of the earth's atmosphere in one year than in another, it follows that there must be as much precipitation from above as evaporation from below.

What then becomes of this precipitated water? We may separate it into three portions. One falls into the oceans, seas, lakes, and rivers, to be again evaporated as before; one falls on the vegetable soil of the valleys and plains of the earth; and the remainder falls on the summits and sides of mountains. The first portion requires no consideration in this place; the second affords nourishment to the vegetable kingdom, and filtrates downwards through the porous soil, the remainder being evaporated; the third is that which, according to the general opinion, is the chief source of springs, rivers, wells, and fountains, which are produced by some such operations as the following:—If the rain which falls on the tops of mountains and elevated places encounter a soil not easily penetrable by water, it collects in rills, which, uniting one with another, form springs and rivulets. These descending along the sides of elevations, seeking a lower level, encounter other similar streams, with which they unite, and at length form a *river*. But if the rain which falls on elevated ground happens to meet with a spongy and porous soil, or one traversed by numerous crevices, the water often sinks into the soil to very great depths before it encounters a barrier formed by an impenetrable stratum. When this has occurred, the lower portion of the water suffers a considerable hydrostatic pressure from that which is above; a pressure which frequently forces it to break a passage through the surface, and to gush out in the form of a *spring*, which ultimately enlarges into a tributary stream of some river. In other circumstances it happens, that the stratum of soil by which the subterraneous accumulation of water is confined, is too strong to yield to this bursting pressure; in such a case no spring, generally so called, occurs; but if a perpendicular opening be made in the ground, to such a depth as will penetrate the strata impervious to water, the subterraneous accumulation of water, having forced an exit, will rise in the opening thus made. The height to which it will rise will depend on the level of the elevated streams from which the water came: if this level be nearly equal to that of the mouth of the perpendicular hole, the water will rise to that level, and we then give it the name of a *well;* but if this level be above the mouth of the hole, the water will have a tendency to rush upwards, and if restrained by proper means, forms a *fountain*.

These are the relations which, in a general point of view, springs, rivers, wells, and fountains bear one to another; but many local peculiarities, and other circumstances of whose nature we are yet ignorant, disturb the regularity of this series. If this succession of phenomena were always regular, it would follow that springs and wells, depending wholly on rain, would vary in their supply of water, according to the drought or humidity of the season; but there are many springs which suffer no diminution even from the longest continuance of dry weather. In such cases the water must be derived from a source partly or wholly independent of rain; and it has been supposed to result from the filtering of sea-water through porous strata landward, the salt particles being lost in the passage. That salt water should thus filtrate to the land seems as probable as that fresh water should filtrate to the sea, which we know to be the case; for instance, there is fresh water found issuing up from the bed of the sea at the mouth of the Rio los Gartos, 500 yards from the shore; in Burlington Bay, Yorkshire; and near Xagua, in the island of Cuba. In all these cases the fresh water must have filtered from a land spring, through the porous strata forming the bed of the sea, and there forced for itself an opening.

There is scarcely any district in England in which the phenomena of springs, wells, and fountains, are exhibited in a more instructive manner than the *London Basin*. Nearly the whole of Essex and Middlesex, together with other districts surrounding the Metropolis, are contained in what may be termed an immense bowl of chalk, many miles in extent, in the interior surface of which there is a thick lining of sand supporting a deep bed of clay called the London Blue Clay; above this is, in most places, another bed of gravel and vegetable mould; and on this latter the Metropolis is built. We may assist our comprehension of this arrangement by imagining a number of basins placed one within another; one of chalk at the bottom, then porous sand, then stiff clay, and lastly porous gravel and mould. The interposition of this bed of stiff clay has a remarkable effect on the mode in which water accumulates beneath the soil of London and its vicinity; for its quality is so dense, that very little water can penetrate it; that which accumulates above cannot penetrate beneath it, while that which accumulates beneath is equally unable to force a passage upwards.

In accounting, therefore, for the water which may be found beneath London, we must consider whether it be above or below the clay. In relation to the former we may quote a remark from a writer in Rees' *Cyclopædia*.

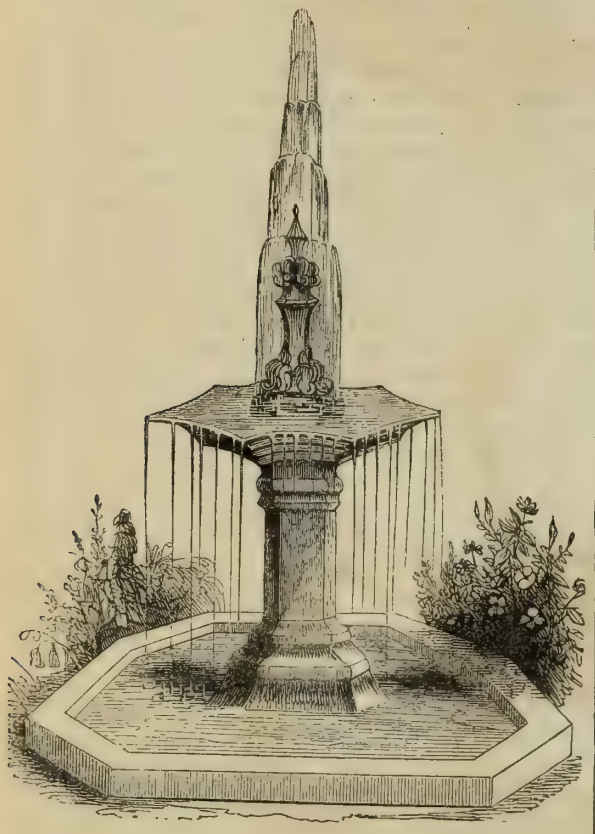
If a bed of sand be of great extent, and supported by a bed of clay or other impervious matter, water will undoubtedly be there found, whatever may be the depth of the bed of sand above it, if a well be dug through it; for as the water which falls in showers upon the earth's surface necessarily sinks through that pervious stratum, it is soon beyond the reach of the sun, so as not to be evaporated, and must sink downwards till it meets with an impervious stratum. There can be no doubt but that, under the immeasureable deserts of Libya, there must be water in abundance to supply any number of persons, were wells there sunk to the requisite depth; nor is that depth perhaps, in many cases, nearly so great as has been in general apprehended.

Whether or not this surmise respecting the African deserts be quite correct, it is certain that the gravel, immediately beneath the vegetable soil in the neighbourhood of London, contains a great deal of water. A large number of the common wells with which individual houses are furnished, obtain their supply of water from the gravel above the clay, instead of the sand beneath it. Whether the wells of this kind are as numerous as the supply of water will admit, or whether the quality of the water is not equal to that found lower down, it is certain that many wells of vast depth have been sunk, penetrating through the entire mass of clay and sand, into the chalk beneath.

It may now be asked, if the whole of the sand be covered by a thick bed of London clay, impervious to

water, how can the rain-water find an entrance into the sand? The answer which has been given to this is a curious one: the chalk, though lying beneath the sand, clay, and gravel, appears, or as it is termed, "crops" out at the *edges* of the basin, to the visible surface; in like manner the sand, though beneath the clay and gravels, crops out at the surface, near the inner margin of the chalk; and it is supposed that the rain falling on these exposed portions of the sand, percolates through the porous strata, until it forms a kind of shell of water beneath the bed of clay. Mr. Mylne, the engineer, says,—

The sand which lies below the clay has always been found considerably charged with water, derived no doubt from the surface of the more distant country, and entering where the sand makes its appearance on the surface, which may be termed entering at the verge of the basin. This outcrop, or margin of sand, is at a great height above the level of the Metropolis. It therefore necessarily follows, that, on boring into this basin, the water will rise in the bore-holes to various distances from the surface, according to the elevation of their respective situations.



It is to this elevation of the exposed surface of the sand, above the level of the ground at any spot where a well may be dug, that we must look for the cause of a *fountain*, as distinguished from a *well*. If, as before observed, the elevation of the source be such as to impel the water above the surface, a fountain is produced, which we may make of an ornamental character, or may use merely as a source for daily supply. Many instances have been given by engineers of the production of such fountains in the neighbourhood of London. In a garden at Isleworth, a well was bored through twenty-four feet of mould and gravel, and three hundred and twenty-seven feet of stiff clay, after which the water rushed up through the whole aperture (nearly equal to the height of St. Paul's, above the ground,) and made a fountain ten feet high from the ground, where it continued to pour forth (through a tube about two inches' diameter) eight gallons of water per minute. In another well, also at Isleworth, a bore of nearly three hundred feet brought up a gush of water to a height of thirty feet above the ground, where it yielded thirty gallons per minute.

Those ornamental pieces of water in parks and pleasure grounds, to which the name of fountain is applied, in most cases result from an artificial reservoir, placed in a concealed spot at a sufficient elevation. The water is conveyed underground through pipes, which are furnished with valves and cocks. Numerous contrivances are adopted for regulating the supply of water, the issue of it at certain times, the ascent of it from some fanciful *embouchure*, such as the mouth of a dolphin, &c., the kind of cataract in which it falls, and the basin in which it is received. But the principle on which all these contrivances depend is, the tendency of water to seek its own level, when flowing in a confined channel from an elevated spot. The Romans appear to have been aware of this fact to a certain extent, although they failed to take advantage of it in the supply of cities with water, a purpose which by no means required the gigantic aqueducts which they erected. The public fountains of Pompeii, some of which are nearly perfect, show that the natives were aware of the ascensive property of water, when under pressure from a higher source; while paintings found at the same spot show that the Pompeians were equally well acquainted with the application of this principle to the formation of ornamental fountains.

Lord! with what care hast Thou begirt us round!
Parents first season us. Then schoolmasters
Deliver us to laws. They send us bound
To rules of reason. Holy messengers;
Pulpits and Sundays; sorrow dagging sin;
Afflictions sorted; anguish of all sizes;
Fine nets and stratagems to catch us in;
Bibles laid open; millions of surprises;
Blessings before-hand; ties of greatefulness;
The sound of glory ringing in our ears;
Without, our shame; within, our consciences;
Angels and grace; eternal hopes and fears!
Yet, all these fences, and their whole array,
One cunning Bosom-sin blows quite away.—

George Herbert.

SENSIBILITY NOT BENEVOLENCE.

There is observable among the many a false sensibility, prompting them to remove those evils and those alone, which disturb their enjoyments by being present to their senses. Other miseries, though equally certain and far more terrible, they not only do not attempt to remedy; they support them, they fatten on them. Provided the dunghill be not before their parlour-window, they are well content to know that it exists, and that it is the hot-bed of their luxuries.

To this grievous failing we must attribute the frequency of war, and the long continuance of the slave-trade. The merchant found no argument against it in his ledger; the citizen at the crowded feast was not nauseated by the filth of the slave-vessel; the fine lady's nerves were not shattered by the shrieks of the sufferers; she could sip a beverage sweetened with the product of human blood, and worse than that, of human guilt, and weep the while over the refined sorrows of Werter or of Clementina. But *Sensibility is not Benevolence.* Nay; by making us tremblingly alive to trifling misfortunes, it frequently precludes it, and induces effeminate and cowardly selfishness. Our own sorrows, like the princes of Hell, in Milton's Pandemonium, sit enthroned "bulky and vast," while the miseries of our fellow-creatures dwindle into pigmy forms, and are crowded, an innumerable multitude, into some dark corner of the mind. There is our criterion, by which we may always distinguish benevolence from mere sensibility: benevolence impels to action, and is accompanied by self-denial—Anon.

LONDON:
JOHN WILLIAM PARKER, WEST STRAND.
Published in Weekly Numbers, price One Penny, and in Monthly Parts, price Sixpence.
Sold by all Booksellers and Newsvenders in the Kingdom

THE

Saturday Magazine.

No. 634. MAY 21ST, 1842. {PRICE ONE PENNY.

RUBENS AND HIS WORKS. II.

THE "CHAPEAU DE PAILLE:" IN THE COLLECTION OF SIR ROBERT PEEL.

On the 29th of September, 1626, Rubens sustained a severe domestic calamity, in the loss of his beloved wife. This loss affected him with that acute sorrow which is usually felt by persons of lively and energetic minds, when subjected to affliction. To divert his mind, he took a journey to Holland, and visited the most distinguished painters there. He gave due praise to their works, and purchased one or more pictures from each of them. Joachim Sandrart, then in his twenty-first year, was appointed to accompany the artist on a tour to the different towns in Holland, and, in his work called the *German Academy*, he thus notices the circumstance:—

"I could find much to relate of this journey, and of the worthy conduct of Rubens, but will merely say, that, as he is distinguished in art, so have I found him eminent in virtues; and I have seen him looked up to with admiration everywhere by persons of high and low degree."

The knowledge of the world acquired by Rubens in the various scenes on which he was called to enter, his extensive acquaintance with political subjects, and with foreign languages, and the peculiar advantages attending his cultivated mind and elegant manners, prepared the way for his becoming useful in a new and totally different character to that of an artist.

The Archduke Albert, shortly before his death, enjoined his wife to trust to the advice of Rubens in matters of difficulty, as to that of a wise, upright, and clear-headed man. From that time Rubens received many marks of favour from the Infanta, and was employed by her in several important political negociations, among which was an embassage to Spain, and afterwards to London, to negociate a peace. Rubens remained many months at Madrid, during which time he completed eight pictures for the large saloon of the palace, and several portraits of Philip IV. and of some of the illustrious persons at Court. In August, 1629, he received his final instructions, and, being furnished with credentials for the British Court, he departed, loaded with presents and honours. On his return to Brussels, the Infanta expressed her approbation of the instructions given by the Court of Spain, and an order was issued for his immediate departure for England.

In October, 1629, Rubens arrived in London, on this secret mission from the Courts of Spain and Flanders. His friend, the Duke of Buckingham, had been dead upwards of a year; and the object of his arrival being then a profound secret, much caution was necessary to prevent the premature disclosure of his plans. He succeeded in procuring an introduction to the Chancellor, Lord Francis Cottington, and so pleased that nobleman that he informed the King of the artist's arrival. His Majesty named an early day for his admission to an audience. In this interview, the King questioned him on many subjects, and, being pleased with his candour and eloquence, appointed a day to sit to him for his portrait. While thus engaged, the artist skilfully contrived to speak of the object of his mission, and remarked, that, "if the two Courts were reciprocally disposed to arrange their differences, the means were at hand." To which Charles replied—"If the King of Spain is of this opinion (as you seem to indicate), why does he not send some one to open a negotiation?" This was the expected question, to which a ready answer was given—"Sire, if I might presume to the honour of being acceptable to your Majesty in that capacity, I could explain myself more openly on the intentions of the King my master, in virtue of the credentials with which his Majesty has furnished me." Charles was pleased with an honourable opportunity of making peace, and the more so, as the war had been undertaken by Buckingham somewhat capriciously, and the resources of England had been greatly diminished through it and the war with France. But the negotiations proceeded so slowly that Rubens found time to execute several pictures. His first production was an allegory, representing the blessings of peace and the horrors of war, "which," says Waagen, "he presented to the king as a tangible recommendation of the pacific measures he had come to propose." This picture, after the breaking up of the collection of Charles I., passed into the possession of the family Balbi of Genoa. It was, however, obtained by the Marquess of Stafford during the French Revolution, and by him munificently presented to the National Gallery. Rubens also painted a St. George engaged in combat with the Dragon: this production is now in Windsor Castle. Also, an Assumption of the Virgin Mary; as also the sketches for the nine pictures which were intended to represent, in an allegorical style, the illustrious deeds of James I., intended for the ceiling of the Hall of the Ambassadors, now the Chapel at Whitehall. The pictures were finished at a later date in Antwerp, as was the custom with this artist in all large works: Rubens is said to have received 3000*l.* for them. The figures are all of colossal proportion, but have suffered much from repeated restorations.

The artist received repeated tokens of favour and reward from the King. In February, 1630, he was knighted in Whitehall, and the King presented to him the sword with which he had performed the ceremony; and when, in November, the treaty of peace was ready to be signed at the Court of Spain, Rubens, on taking leave, received a handsome service of plate, and the portrait of the King, attached to a rich chain of gold, which last, in grateful remembrance, he ever after wore around his neck. But while thus successful in gaining the favour of the King of England, he kept steadily before his view the interests of the Court of Spain, as is proved by the fact that the articles of peace were most disadvantageous to England, and also by the honourable reception which Rubens met with at the Court of Madrid, whither he proceeded to give an account of his diplomatic labours. Philip IV. accompanied his expressions of high approbation with many costly presents. The artist having again painted the portraits of the King and several of his courtiers, with some other pictures of value, besides taking the measurement for works intended for the Palace Torre de la Parada, again returned to Brussels, where a gracious reception awaited him from the Infanta.

We must here interrupt our narrative to describe the celebrated picture from which the subject of our frontispiece has been taken. This picture, probably the most celebrated of all Rubens' portraits, is called the Chapeau de Paille, and is now the chief ornament of the fine collection of Sir Robert Peel, in London.

No picture justifies more than this the appellation which Rubens has obtained, of the painter of light. No one who has not beheld this masterpiece of painting can form any conception of the transparency and brilliancy with which the local colouring in the features and complexion, though under the shadow of a broad-brimmed Spanish beaver hat, are brought out and made to tell; while the different parts are rounded and relieved with the finest knowledge and use of reflected lights. The expression of those youthful features beaming with cheerfulness, is so full of life, and has such a perfect charm, that one is inclined to believe the tradition, that Rubens fell in love with the original (a young girl of the Landens' family at Antwerp,) whilst she was sitting to him. The treatment throughout displays a master-hand, capable of sporting with its subject and material.—WAAGEN.

The very inappropriate name of Chapeau de Paille, or Straw Hat, can only have been given to this picture in later days; for in the catalogue of pictures taken after the death of Rubens, this picture is entered simply as "A Portrait of a Young Lady, with her hands crossed in front." Mr. John Smith, who imported the picture into this country, gives some curious and interesting particulars respecting it. He describes the picture as the portrait of a young lady "wearing a black Spanish hat, adorned with black and white feathers, and elegantly attired, according to the costume of the time, in a black velvet bodice and skirt, with scarlet sleeves and white epaulettes, tied with rose-colour ribbons, and a tawny-colour scarf, thrown in a negligent manner over the shoulders; the hands are passed over each other in front, the left one holding the scarf. Her complexion is most delicately fair, but the hat inclining forward, throws a shade over the upper part of the face, which, by the reflex from the white bosom, is rendered beautifully transparent. She is represented passing before the exterior of a window, on a fine sunny day, the effect of which is strikingly denoted in the brilliancy of the colouring."

The artist is said to have prized this picture so highly that he never could be induced to part with it. After his death, and that of his widow, it passed into the family of Landens, where it remained as a joint property until a few years back, when it was purchased by Baron Stiers d'Aertselaer, for 2000*l.* On the decease of the Baron it was sold for the benefit of his children, in a collection of other valuable pictures, at Antwerp, on the 29th July, 1822, and was purchased by Mr. Smith, in conjunction with another person, at the total cost of about 3000 guineas.

Shortly after the arrival of the picture in England it

was sent to Carlton House, at the express desire of His Majesty George IV., who was highly delighted with the picture, and retained it a fortnight. An opinion having been expressed by His Majesty's advisers that the price demanded was too high, Mr. Smith, "anxious to see so distinguished a specimen of the art in the royal collection, offered to accept such remuneration upon the prime cost as those gentlemen might think fit to recommend." "A proposition was then made, that some other pictures should be taken in part exchange, but they proved to be of such very indifferent quality," says Mr. Smith, that he was "under the necessity of refusing them. Thus the affair terminated."

In March, 1823, it was exhibited at Mr. Stanley's Rooms, Old Bond-street, and was viewed with general admiration and applause. During the four months of its exhibition nearly twenty thousand persons are stated to have visited it; after which it was bought by Sir Robert Peel for 3500 guineas.

FUNERAL CEREMONIES OF THE ANCIENT KINGS OF MEXICO.

When a king of Mexico died, a lock of his hair was cut off as a relic, for therein lay the remembrance of his soul, an emerald was put into his mouth, and his body was wrapped in seventeen costly and curiously wrought mantles. Upon the outer mantle was the device or arms of that idol to whom he was most devoted, and in whose temple the body was to be buried. Upon the king's face was a visor, painted with devilish gestures, and beset with jewels; then they killed the slave whose office it was to light the lamps and make the fire to the gods of the palace. They then carry the body to the temple, with targets, arrows, maces, and ensigns, to throw into the funeral fire. The priests, some of whom are called Papas, and dress in black, receive him with a sorrowful song, and drums and flutes; and the body is cast into the fire, together with jewels, and a dog newly strangled to serve as a guide. Then about two hundred persons are sacrificed by the priest, to serve him. The fourth day fifteen slaves, upon the twentieth day five, and on the sixtieth day three, are sacrificed for his soul. The ashes and the lock of hair, with another which had been saved from the time of his birth, were put into a chest, painted on the inside with devilish shapes, on which chest was the image of the king. The king of Michnacan observed the like bloody rites; many gentlewomen were appointed to office in the service of the deceased, and while his body was burning, were killed with clubs, and buried four and four in a grave: slaves and free maidens were killed to attend the gentlewomen.—Purchas.

SEA PIECE IN THE PACIFIC.

On approaching the land, we found that the barrier reef which encircles it afforded but one narrow entrance; and even this was occupied by powerful and rapid rollers, which were anything but inviting. A canoe, fishing in the offing, enabled us to obtain a pilot; when taking advantage of a tranquil interval, we pushed through the swell, and passed by an abrupt transition into the vast expanse of lagoon water between the reef and the main-land.

It is impossible to imagine a scene more perfectly beautiful than the one presented to our view as we glided through this placid sea, and towards the land, which rose towering, rocky, and isolated, at the distance of about three miles ahead of us. On every side a broad sheet of water, mapped out in various hues corresponding with its depth, contrasted strongly with the turbulence of the ocean outside the reef; while the bosom of the lagoon was strewn with many coral islets, level, circular, and often of great extent; their shores girded by a sandy beach of dazzling whiteness, and their soil covered with cocoa-nut palms, pandanus and casuarina trees, as well as with a short and verdant pasturage, unencumbered by any other underwood than a few bushes of Cape jessamine. Here and there a solitary hut appeared amidst the foliage of these motus; and some small goats (probably left here by a ship) ceased to browse on our approach, and followed the boats along the beach, bleating forth a plaintive recognition. The serenity of the morning and the sweet odour of pandanus flowers combined to increase the attractions of this enchanting spot, and conveyed an impression on which memory yet dwells with extreme pleasure.—Bennett's *Whaling Voyage.*

THE LADDER TO THRIFTE.

To take thy calling thankefully,
And shunne the path to beggery.
To grudge in youth no drudgerie,
To come by knowledge perfectly.
To count no travell slaverie,
That brings in penny saverlie.
To follow profite earnestly,
But meddle with no pelfery.
To get by honest practisy,
And keepe thy gettinges covertly.
To lash not out too lashingly,
For feare of pinching penurie.
To get good plotte to occupie,
And store and use it husbandly.
To shew thy landlord courtisy,
And keepe thy covenauntes orderly
To hold that thine is lawfully,
For stoutnesse or for flatterie.
To wed good wife for companie,
And live in wedlocke honestly.
To furnish house with houshouldrie,
And make provision skilfully.
To joyne to wife good familie,
And none to keepe for braverie.
To suffer none live idlely,
For feare of idle knaverie.
To courage wife in huswiferie,
And use well-doers gently.
To keepe no more but needefully,
And count excesse unsavourie,
To raise beetimes up readily,
Both snorting Hob and Margerie.
To walk thy pastures usually,
To spie ill neighbours subtilly.
To hate revengement hastily,
For losing love and amitie.
To live by neighbour neighbourly
And shew him no discourtesie.
To answer straungers civily,
But shew him not thy secresy.
To use no frend decietefully,
And offer no man villanie.
To learne howe foe to pacifie,
But trust him not too trustily.
To keep thy touch substantially,
And in thy worde use constancie.
To make thy bondes advisedly,
And come not bounde through surety.
To hate to live in infamie,
Through craft and living naughtilie.
To banish house of blasphemie,
Least crosses cross unluckily.
To stop mischance through policie,
For chancing too unhappily.
To beare thy crosses patiently,
For worldly things are slippery.
To traine thy childe up vertuously,
That vertue vice may qualifie.
To bridle wild oates' fantasy,
To spend thee nought unthriftilie.
To pray to God continually,
To aide thee against thine enimie.
To spend the Sabbath holily,
And helpe the poore in miserie.
To live in conscience quietly,
And keepe thyselfe from malady.
To ease thy sicknesse speedily,
Ere helpe be past recoverie.
These be the steppes unfeinedly,
To climb to thrift by husbandrie.
These steppes both teach,
and reach thee shall;
To come by thrift,
to shift withall.

[Taken from the end of *A Booke of Christian Questions and Answeres* of 1681.]

The framer of preventive laws, no less than private tutors and schoolmasters, should remember that the readiest way to make either mind or body grow awry is by lacing it too tight.—Southey.

THE PHOTOMETER, OR LIGHT-MEASURER.

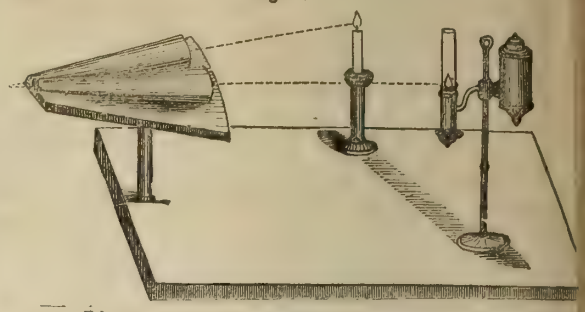
It is a subject for regret that science has not yet furnished an instrument of sufficient accuracy and delicacy to measure light, as the thermometer measures heat. Although the quantity of light which falls upon the earth is very unequal at different times, depending, as it does, upon the height of the sun, upon clouds, and upon certain states of the atmosphere, yet there are no means for comparing days together, under the relation of their degree of light, as we are accustomed to compare them with respect to heat. The photometers that we at present possess are adequate to little more than the comparison of two luminous bodies, and then this comparison is only exact within certain limits. The difficulties which attend inquiries of this nature are well stated by a high authority in this department of science.

We know of no instrument, no contrivance, as yet, by which light alone, (as such,) can be made to produce mechanical motion, so as to mark a point upon a scale, or in any way to give a direct reading off of its intensity, or quantity at any moment. This obliges us to refer all our estimations of the degrees of brightness at once to our organs of vision, and to judge of their amount by the impression they produce immediately on our sense of sight. But the eye, though sensible to an astonishing range of different degrees of illumination, is (partly on that very account) but little capable of judging of their relative strength, or even of recognising their identity when presented at intervals of time, especially at distant intervals. In this manner the judgment of the eye is as little to be depended on for a measure of light, as that of the hand would be for the weight of a body casually presented. This uncertainty, too, is increased by the nature of the organ itself, which is in a constant state of fluctuation; the opening of the pupil, which admits the light, being continually expanding and contracting by the stimulus of the light itself, and the sensibility of the nerves which feel the impression varying at every instant. Let any one call to mind the blinding and overpowering effect of a flash of lightning in a dark night, compared with the sensation an equally vivid flash produces in full day-light. In the one case the eye is painfully affected, and the violent agitation into which the nerves of the retina are thrown is sensible for many seconds afterwards, in a series of imaginary alternations of light and darkness. By day no such effect is produced, and we trace the course of the flash, and the zig-zags of its motion, with perfect distinctness and tranquillity, and without any of those ideas of overpowering intensities, which previous and subsequent total darkness attach to it.

But yet more. When two unequally illuminated objects (surfaces of white paper for instance) are presented at once to the sight, though we pronounce immediately on the existence of a difference, and see that one is brighter than the other, we are quite unable to say what is the proportion between them. Illuminate half a sheet of paper by the light of one candle, and the other half by that of several, the difference will be evident. But if ten different persons are desired, from their appearance only, to guess at the number of candles shining on each, the probability is, that no two will agree. Nay, even the same person, at different times, will form different judgments. This throws additional difficulty in the way of photometrical estimations, and would seem to render this one of the most delicate and difficult departments of optics.—Herschel's *Treatise on Light*.

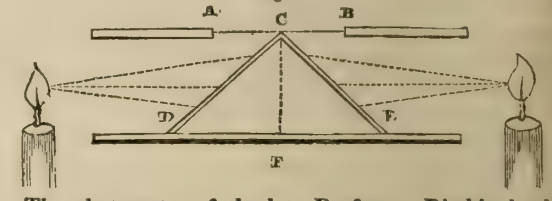
Under favourable circumstances, however, the eye is a tolerably exact judge of the *equality* of two degrees of illumination seen at once. If, for example, we wish to ascertain the relative quantities of light furnished by two different lamps, the most simple method is to place two disks of white paper on a wall a few feet apart, and to illuminate one disk with the light of one lamp, and the other disk with that of the other: then the lamp which affords most light must be removed to such a distance that the two disks may appear equally illuminated. On comparing the distance between each lamp and its corresponding disk, we shall be able to calculate the luminous intensities of the two lamps. These intensities are to each other as the square of the distance: that is, suppose that when the disks are equally illuminated, the distance from one lamp to its disk is double the distance of the second lamp from its disk, then the first lamp is four times more luminous than the second; nine times more luminous if the distance be triple, and so on. This method is not very exact, because the eye cannot appreciate accurately, the amount of light necessary to make the two disks equally bright. A better method is shown in fig. 1: two conical

Fig. 1.



tubes are united at their smaller extremities, and terminated at this place by two disks of white paper. If we wish to compare the light of a lamp with that of a candle, in order to ascertain how many candles will give a light equivalent to that of the lamp, the two lights are placed so far apart that their rays shall not interfere, the broad end of one of the tubes is directed to the lamp, and the broad end of the other tube to the candle. The lamp is then drawn back, or the candle moved forward, until the two disks appear equally luminous. The distances are then measured, and the calculation made as before.

Fig. 2.

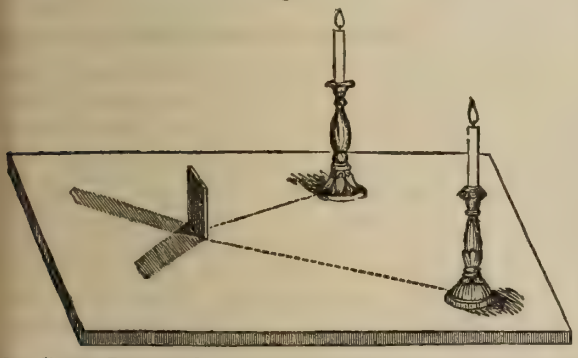


The photometer of the late Professor Ritchie is the most perfect instrument constructed, for measuring the relative brightness of two lights, provided they are of the same colour, a condition which also applies to the two methods just given. A vertical section of Ritchie's photometer is shown in fig. 2. It consists of a rectangular box, open at both ends, and blackened within, to absorb extraneous light. On the top is a long, narrow, rectangular slip A B, covered with tissue or oiled paper. Within are two sheets of looking-glass, C D and C E, cut from the same piece in order to secure uniformity of reflection. Each sheet has the same width as the box, and its reflecting surface is turned towards the open end of the box. The upper edges of the mirrors rest against each other at C, where there is a line which divides the space A B into two equal parts. This line is formed of black card to prevent the mingling of the lights reflected from the two mirrors. In using the instrument it is placed between the lights, whose intensities are to be compared, so that they may be reflected from C D and C E, upon the tissue A B. It is then approached nearer to one or the other, until, to an eye situated above A B, the two portions A C and B C appear equally illuminated, which, on account of the immediate proximity of A C and B C, may be determined with tolerable accuracy. The distances must be measured from the vertical C F. In viewing the illuminated disk, it is well to look at it through a prismatic box, about eight inches long, blackened within to absorb shining light. One end of this box is to rest on the upper part A B of the photometer, and the other to be applied close to the eye. Sometimes, instead of using mirrors and the paper-screen,

the inclined planes are covered with white paper, and looked at directly through the aperture. However the instrument be used, a mean of several observations should be taken, the instrument being turned round each time. When the lights compared are of different colours (as daylight, or moonlight, and candlelight) the rectangular opening A B is to be covered with a piece of fine white paper, printed distinctly with a small type; the paper is to be brushed over with oil, and then the instrument being placed between the lights, they are to be moved till the printing can be read continuously along the paper, with equal ease on the one side as on the other. Or the printed paper may be pasted on the mirrors, or the inclined surfaces against which they lie, and is then to be read through the opening. It is of advantage to enlarge the openings in their applications of printed paper.

The simple method of comparing two sources of illumination by means of shadows (fig. 3), was contrived

Fig. 3.



by Count Rumford. The two lights are so arranged that each may cast a shadow of some object, such as a book or a stick upon a plane, white surface: the eye can then form a tolerable judgment of the relative darkness of these shadows. The brighter light, which casts the deepest shadow, is then to be removed, or the weaker to be approached, till the two are equalized, and the distance of the two lights from the object which intercept their rays being measured, the relative intensity of the lights will be, as before, as the squares of the distances. In this case the shadow of one light is illuminated solely by the rays of the other, while the surrounding space is illuminated by the rays of both; when the shadows therefore are equal, the lights are equal.

The method of Count Rumford is so easy that we trust our young readers will try a few experiments with it. All the apparatus required is a large table, with the white table-cloth on to receive the shadows, and a little book to cast them. The inventor applied this method to measure the variations in light, furnished by a candle left unsnuffed. There are few persons who do not feel annoyed to have to use the snuffers so often, but we know that if they are allowed to remain idle, carbon accumulates in the wick, and hinders the combustion of the tallow. Now supposing the light furnished by a candle when properly snuffed to equal 100, and if it be allowed to burn untouched during 11 minutes, the light will then be equal to only 39; and if allowed to burn unsnuffed during half an hour, only 16. Or, in other words, a room is equally well lighted, whether we put into it two candles that have just been snuffed, or five candles that have remained 11 minutes without snuffing, or thirteen candles that have been half an hour unsnuffed. It may, perhaps, be thought that we do not need a scientific instrument to convince us of the utility of snuffing candles; but it may be useful to know the extent of the utility of a pair of snuffers.

The photometer of Professor Leslie is constructed on the principle that light is convertible into heat. This principle, however, is not established, and, therefore, no dependence can be placed upon the instrument. It consists of the differential thermometer, of which one of the bulbs is blackened and the other clear: a glass case is put over the instrument to exclude rays of heat. When this instrument is used, the light to which it is exposed passes through the clear ball, but is absorbed by the black, and, supposing this light to be converted into heat, the rise of temperature will indicate the degree of illumination. In speaking of this instrument the ventor says, that when

Placed in the open air, it exhibits distinctly the progress of illumination, from the morning's dawn to the full vigour of noon, and thence its gradual decline till evening has spread her mantle; it marks the growth of light from the winter solstice to the height of summer, and its subsequent decay through the dusky shades of autumn; and it enables us to compare, with numerical accuracy, the brightness of different countries, the brilliant sky of Italy, for instance, with the murky atmosphere of Holland.

These remarks apply quite as much to a delicate air thermometer, as this photometer essentially was, as to the instrument with which it was professed to measure light. Indeed when we notice the discrepancies in the results of those whose reputation for accurate observation stands deservedly high, we must at once admit the imperfection of all photometrical measurements hitherto made. Leslie fixes the relative intensity of solar light to lunar light at 94,500: Bouguer finds it to be 256,289; and Wollaston 800,000. The great difference between these numbers depends not only upon the uncertainty of the means of observation, but also upon the state of the atmosphere, and the altitude of the heavenly bodies, at the times of observation. Leslie also infers that the light emitted from the sun is 12,000 times more powerful than the flame of a wax candle; so that, if a portion of the luminous solar matter, rather less than an inch in diameter, were transported to our planet, it would throw forth a blaze of light equal to the effect of 12,000 candles—Bouguer says 30,000 candles.

The discovery of an exact method of estimating the intensity of a natural source of light, such, for example, as a fixed star, would be of great benefit to science, especially to astronomy. Stars might then be classified according to their luminous intensities, and their probable distances from the earth could be thus more perfectly arrived at. The aid which an instrument affords to science depends entirely upon the accuracy of its indications: it is valuable only when it affords the same numerical results whenever and wherever the same forces concur to produce them, and when any variation in the forces is met by a corresponding variation in the results.

ON EARLY RISING.

Rise with the lark, and with the lark to bed.
The breath of night's destructive to the hue
Of every flower that blows. Go to the field,
And ask the humble daisy why it sleeps
Soon as the sun departs: why close the eyes
Of blossoms infinite, ere the still moon
Her oriental veil puts off? Think why,
Nor let the sweetest blossom be exposed
That nature boasts, to night's unkindly damp.
Give to repose the solemn hour she claims;
And from the forehead of the morning steal
The sweet occasion. Oh! there is a charm
That morning has that gives the brow of age
A smack of youth, and makes the lip of youth
Breathe perfumes exquisite. Expect it not,
Ye who till noon upon a down-bed lie,
Indulging feverish sleep, or, wakeful, dream
Of happiness no mortal heart has felt
But in the regions of romance. Ye fair,
Like you it must be wooed or never won,
And, being lost, it is in vain ye ask
For milk of roses and Olympian dew;
Cosmetic art no tincture can afford,
The faded features to restore: no chain,
Be it of gold, and strong as adamant,
Can fetter beauty to the fair one's will.—Hurdis.

AVARICE.

AN avaricious man will be little affected by the arguments of reason, philosophy, or religion; he is born and framed to a sordid love of money, which first appears when he is very young, grows up with him, and increases in the middle age, and when he is old, and all the rest of his passions have subsided, wholly engrosses him—the greatest endowments of the mind, the greatest abilities in a profession, and even the quiet possession of an immense treasure, will never prevail against avarice.

My Lord Hardwick, the late Lord Chancellor, who is said to be worth 800,000*l.*, sets the same value on half-a-crown now as he did when he was only worth 100*l.* That great Captain, the Duke of Marlborough, when he was in the last stage of life, and very infirm, would walk from the public rooms in Bath to his lodgings in a cold and dark night to save sixpence in chair-hire. If the Duke, who left at his death more than a million and a half sterling, could have foreseen that all his wealth and honours were to be inherited by a grandson of my Lord Trevor's who had been one of his enemies, would he have been so careful to save sixpence for the sake of his heir? Not for the sake of his heir; but he would always have saved a sixpence.

Sir James Lowther, after changing a piece of silver in George's coffee-house, and paying twopence for his dish of coffee, was helped into his chariot, (for he was then very lame and infirm,) and went home. Some little time after, he returned to acquaint the woman who kept it, that she had given him a bad half-penny. Sir James had about 40,000*l.* per annum, and was at a loss whom to appoint his heir.

I knew one Sir Thomas Colby who killed himself by rising in the middle of the night when he was in a very profuse perspiration, the effect of sudorific medicine which he had taken, and walking down stairs to look for the key of his cellar, which he had inadvertently left on a table in his parlour: he was apprehensive that his servants might seize the key and rob him of a bottle of port wine. This man died intestate, and left more than 200,000*l.* in the funds, which was shared among five or six day labourers, who were his nearest relations.

Sir William Smyth of Bedfordshire, who was my kinsman, when he was near seventy, was wholly deprived of his sight: he was persuaded to be couched by Taylor, the oculist, who, by agreement was to have sixty guineas if he restored his patient to any degree of sight. Taylor succeeded in his operation, and Sir William was able to read and write without the use of spectacles during the rest of his life; but as soon as the operation was performed, and Sir William perceived the good effects of it, instead of being overjoyed, as any other person would have been, he began to lament the loss (as he called it) of his sixty guineas. His contrivance, therefore, now was how to cheat the oculist; he pretended he had only a glimmering, and could see nothing perfectly; for that reason the bandage on his eyes was continued a month longer than the usual time. By this means he obliged Taylor to compound the bargain, and accept of twenty guineas; for a covetous man thinks no method dishonest which he may legally practise to save his money. Sir William was an old bachelor, and at the time Taylor couched him had a fair estate in land, a large sum of money in the stocks, and not less than 5,000*l.* or 6,000*l.* in his house.

But to conclude this article; all the dramatic writers, both ancient and modern, as well as the keenest and most elegant satirists, have exhausted their whole stock of wit to expose avarice; this is the chief subject of Horace's satires and epistles; and yet the character of a covetous man hath never yet been fully drawn or sufficiently explained. The *Euclio* of Plautus, the *L'Avare* of Molière, and the *Miser* of Shadwell, have all been exceeded by some persons who have existed within my own knowledge. If you could bestow on a man of this disposition the wealth of both the Indies, he would not have *enough;* because by *enough* (if such a word is to be found in the vocabulary of avarice) he always means something more than he is possessed of. Crassus, who had a yearly income sufficient to maintain a great army, perished, together with his son, in endeavouring to add to his store. In the fable of Midas, the poet had exhibited a complete character, if Midas, instead of renouncing the gift which the god had bestowed on him, had chosen to die, in the act of creating gold.—*From* ANECDOTES OF HIS OWN TIMES, *by* DR. WILLIAM KING, *Principal of St. Mary Hall, Oxon., who died in* 1763, *aged* 78.

THE FIRST RAILWAYS.

THE first railways were of wood, and the earliest account of their introduction occurs in the account of the life of the Lord Keeper North, wherein it appears that about the year 1670 they were employed at Newcastle-upon-Tyne, for transporting coals from the mines to the barges in the river Tyne, in which service, even at that time, when the demand for coals was so limited, nearly five hundred carts were constantly employed. It became, therefore, an important object to reduce the expense of maintaining so many horses, carters, and roads, as these conveyances required; and the plan of wooden rails was the best method which at that time could have been adopted. The situation, too, was favourable, since it presented for the most part, an easy descent towards the river. These roads soon became generally introduced in the coal districts. Strips of ground of the required length were laid out between the mouths of the coal-pits and the river, and were leased to the coal-owners, or purchased by them of the land-owners, through whose property the road extended.

The line of road was varied in its direction, so as to meet the unevenness of the ground, and thereby to obtain an easier and more regular descent; in some cases, embankments and cuttings were made, and a regular slope obtained. The ground being thus prepared and smoothed, large logs of wood called *sleepers*, cut in lengths equal to the breadth of the road, were fixed across it, and embedded firmly at short intervals, to which the wooden rails were fixed, on which the wheels of the carriages were to run. These rails were generally formed of beech, and were placed end to end, so as to form two parallel lines, one for each wheel, the ends of these rails being secured to the wooden sleepers, which served as foundations. The coal-waggons were of large size with small wheels, the smoothness of the road rendering high wheels unnecessary. An ordinary horse drew three tons of coal on this road without difficulty. When a more than usually steep descent occurred, it was called a *run;* and the too rapid descent of the waggons was prevented by a species of crooked lever, or brake, called a *convoy*, attached to the waggon and regulated by the driver.

Along the steep banks of the Tyne, the railway was continued on a wooden stage, raised to the height of the top bank of the river, and carried forward until it came over the river side, where a wooden platform, called a *staith*, was erected for the purpose of delivering the coals through shoots or spouts directly into the holds of ships moored underneath, or into a store below, from which the ships might afterwards be conveniently loaded. The defect of these rails arose from the decaying nature of the substance composing them, and the expense of maintaining them in repair greatly detracted from their value. They were much improved by fixing flat bars of iron to their surfaces; but the grand improvement of all consisted in forming the rails altogether of iron, and substituting stone sleepers for those of wood. The first construction of iron rails is said to have originated in a curious circumstance.

The proprietors of the Colebrook Dale Iron Works first determined to cover their wooden rails with cast-iron, not that they thought to improve the rails thereby, but they hoped that if their plan were generally adopted, the sale of iron, in which they were so much interested, would be promoted. "But it happened some time after that the price of pigs* became very low, and their works being of great extent, in order to keep the furnaces on, they thought it would be the best means of stocking their pigs to lay them on the wooden railways, as it would help to pay the interest of expenses by reducing the repairs of the rails; and if iron should take any sudden rise, there was nothing to do but to take them up and send them away as pigs." This is the account of the first adoption of iron rails, about the year 1767, as given by Hornblower to a committee of the House of Commons on the subject of roads and carriages.—*Roads and Railroads, Vehicles, and Modes of Travelling.*

THE moon shall seem to take some hours in getting half a yard from a star which it touched. But what is the fact? The moon is all this while driving through the heavens at a rate of considerably more that two thousand miles an hour, which is more than double of that with which a ball is shot off from the mouth of a cannon. Yet is this prodigious rapidity as much under government as if the planet proceeded ever so slowly, or was conducted in its course inch by inch.—PALEY.

* "Pigs of iron," are masses of metal, of a certain form and weight, as delivered from the foundry to the workers in iron.

SIR T. STAMFORD RAFFLES.

II.

When Sir Thomas had returned from Holland to England he embarked with his family, in October, 1817, for Sumatra. On arriving at Fort Marlborough, the seat of the English government at Bencoolen, he found the place in a most wretched condition: ruin and dilapidation surrounded them. What with natural impediments, bad government, and the awful visitations of Providence, experienced in repeated earthquakes, there was, as the new governor reported, scarcely a dwelling in which to lay their heads, or wherewithal to satisfy the cravings of nature! The roads were impassable; the streets of the town were overrun with rank grass; and the government-house was a den of ravenous dogs and polecats. With all this, it is only natural to find him describing the people as idle, dissolute, and depraved.

Too zealous to carry into effect the improvements he contemplated, he waited not for orders from home, which would have occasioned the loss of a year; and, conscious that no improvement could take place until he had cleared away the rubbish at Fort Marlborough, he commenced at once by liberating the slaves. He then classified about 500 convicts, sent from Bengal, into three divisions, according to their characters; and in a short time these people, who had been living in the lowest state of degradation, became useful labourers, and happy members of society. He then assembled the native chiefs, and made a treaty with them: by one of the articles the cultivation of pepper was declared to be free, the people being at liberty to cultivate that article or not, as they might think fit.

These people were particularly anxious to be freed from the disgrace which had been attached to their character by the prohibition against wearing their *kris*, according to an ancient custom of the country. The *kris* is the Javan dagger, hanger, or short sword. This prohibition Sir Stamford immediately, and without hesitation, removed. The prohibition had originated in the murder of Mr. Parr, in 1801, who, as governor, had made himself obnoxious by endeavouring to force upon the people the culture of coffee, in addition to that of pepper; besides which, an arbitrary interference with the native courts of justice, without the concurrence or advice of the chiefs, had excited their fears for their ancient customs and institutions. The measures taken on this catastrophe were highly impolitic: several of the natives were blown from the mouths of guns; an order was issued to burn and destroy every village within a certain distance; and the work of devastation was carried on as if the future security of the settlement depended on surrounding it with a desert. The fruit-trees that surrounded the villages, and that were so much loved by the Malayans, were felled; whatever could afford shelter and protection was levelled with the ground, and the whole population of the suspected villages turned loose upon the country.

The desolate condition of the country surrounding Fort Marlborough was such, on Sir Stamford's first arrival, that no one thought of living out of the settlement, and no servant could be induced to venture out three miles after sunset. The new governor conceived the best way to re-people the country was, to set them an example, by building a house twelve miles out of the town. He accordingly made his country residence on the Hill of Mists, and gave orders for clearing the forest. The wild beasts of the desert, principally tigers and elephants, had long increased upon the natives. Numbers of people were annually carried off by the tigers; and the survivers, instead of resisting, sought to propitiate their persecutors by offerings of rice and fruits: but now, open war was declared and carried on against the whole race of wild and ferocious animals; and Sir Stamford and his family were soon able to reside upon the Hill of Mists without any danger from their attacks.

In five years from the building of his house on this spot, the whole intermediate space was chequered with villas, and surrounded with plantations. At this time, out of 100,000 nutmeg-trees, which had been planted by Sir Stamford, one-fourth were in full bearing. The nutmeg-tree is exceedingly beautiful; it bears in profusion, and spreads its branches in a wide circle. Its fruit is perhaps the most beautiful in the world: the outside covering, or shell, is of a rich cream colour, and resembles a peach; this bursts, and shows the dark nut, encircled and chequered with mace of the brightest crimson, and, when contrasted with the deep emerald green leaf, is delightfully grateful to the eye.

The avenue to their house was formed, as Lady Raffles tells us, of clove-trees, the noble height of which, the beauty of their form, the luxuriance of their foliage, and, above all, the spicy fragrance with which they perfume the air, produced, in driving through a long line of them, a degree of exquisite pleasure only to be enjoyed in the clear light atmosphere of the latitudes of the Indian Islands. As a proof of the luxuriance of vegetation in this part of the world, it may be stated that, within a twelvemonth, some casuarina-trees had shot up to the height of thirty and forty feet; and the government-house was encircled by a shrubbery of nutmeg, clove, cocoa, and cassia-trees. The place seemed, in fact, to have been converted, almost by magic, from a wilderness into a garden.

It appears to have been once too much the system to exclude even respectable natives from the society of Europeans, both in the settlement of Sumatra, and in most other parts of India. Sir Stamford at once broke down this barrier, and opened his house to the chiefs and higher classes of natives on all occasions; and this practice he continued during the whole period of his residence in Sumatra. His house was rarely without some of them; and, in short, he had constant opportunity of studying their feelings, sentiments, and manners; and such was the confidence they placed in him, that in his measures for the good of the community they were at all times ready to give their cordial co-operation. Both chiefs and people were soon brought to consider him their best friend and adviser: they gave in to his opinion upon all occasions, and harmony and good-will prevailed throughout the settlement.

He likewise accomplished the means for printing in the Roman and native characters, and then proceeded to establish a plan of schools for educating the whole of the native population. He was so far from opposing missionaries, that he declares that the more that came out the better he was pleased:—"Only," says he, "let them be enlightened men, and placed in connexion with the schools, and under due controul."

Though greatly distinguished by his administrative abilities, Sir Stamford Raffles owes his reputation chiefly to his researches into the natural productions of Sumatra, and particularly to his numerous zoological discoveries. He was cheerfully assisted by the natives; and he likewise made various interesting excursions into the interior of the island. Lady Raffles accompanied him, being the first European lady that had ever been seen beyond the confines of Bencoolen. In his first journey was discovered the largest and most extraordinary flower perhaps that exists in the whole creation,—the *Rafflesia Arnoldi*—so called because first observed by Raffles, in company with Dr. Arnold. The natives, however, have long given it the appellation of the "devil's betel-box." We need not here further notice this wonderful production, as the reader will find it fully described, with engravings, at Vol. I., p. 91, of this work. But the whole vegetable part of the creation is here on a magnificent scale.

There is nothing (observes Sir Stamford) more striking

in the Malayan forests than the grandeur of the vegetation: the magnitude of the flowers, creepers, and trees, contrasts strikingly with the stunted, and, I had almost said, pigmy vegetation of England. Compared with our forest-trees, your largest oak is a mere dwarf. Here we have creepers and vines entwining larger trees, and hanging suspended for more than a hundred feet, in girth not less than a man's body, and many much thicker; the trees seldom under a hundred, and generally approaching a hundred and sixty to two hundred feet in height. One tree that we measured was, in circumference, nine yards; and this is nothing to one I measured in Java.

In one of these journeys an occurrence took place, which, while it shows the simplicity of the natives, was rather of a vexatious nature, though quite pardonable, and even amusing. At a place where felspar, granite, quartz, and other minerals of primitive formation were found, mixed with a variety of volcanic productions, Dr. Horsfield, one of the company, got specimens of these, which he gave in charge to some coolies who attended him. After the day's journey he wished to examine this collection: the men produced their baskets full of stones, but on the doctor's exclaiming they were not what he had given them, and expressing some anger on the occasion, they simply observed that they thought he only wanted stones; and as they preferred carrying their baskets empty they threw away what he gave them, and filled them up at the end of the day's journey, and they were sure they gave him more than he collected.

After visiting the Paisuma country, he made another and a longer journey to the capital of Menangkabu, the original of all the Malayan governments. This distant and retired portion of Sumatra possesses an extensive population and a high state of cultivation. Innumerable towns and villages succeed each other, shaded by the cocoa-nut and other fruit-trees. There were also the remains of buildings, and inscriptions that proved a remote antiquity. Sir Stamford decidedly believed it to be the wreck of a great empire, hardly known to us but by name.

Governor Raffles soon after turned his attention to to the island of Nias, opposite the settlement of Tappanooly, off the western coast of Sumatra. His description of Pulo Nias seems very highly coloured, though doubtlessly grounded on truth. His proceedings with a view to protect and encourage the people of Nias in habits of industry were not however universally approved of by the authorities at home. The Court of Directors observed that as they "had no hesitation in declaring that his proceedings in regard to Pulo Nias were deserving of their decided reprehension, they were inclined to visit him with some severe mark of their displeasure for the steps he had taken in reference to the suppression of the slave-trade," and they even threatened to remove him from his government.

We must not omit to notice the settlement of Singapore, which owes its origin to the genius and activity of Sir Stamford Raffles. The Dutch had long possessed themselves of the only passes through which ships could sail into the Indian Archipelago and the China seas, namely, the Straits of Sunda and Malacca; and such was the situation of Great Britain that she had not left herself an inch of ground to stand upon in the whole track between the Cape of Good Hope and China, nor a single friendly port at which her ships could water, or obtain refreshment. This was much regretted by Sir Stamford, who, conceiving that a personal communication with the Governor General might be useful, with his usual decision and zeal immediately set out for Calcutta. Here it was arranged that, as the Straits of Sunda were completely in possession of the Dutch, Sir Stamford, as an authorized agent of the Governor-General, should endeavour to find out some central station for the benefit of commerce within the Archipelago, so as to secure a free and uninterrupted passage with China through the Straits of Malacca. This was quite enough, as Sir Stamford had already fixed in his own mind the position that would answer every purpose. To use his own words,—"he neither wanted people nor territory; all he asked was, permission to anchor a line-of-battle ship, and hoist the English flag at the mouth either of the Straits of Malacca, or of Sunda, and the trade of England should be secured."

Singapore, an island at the eastern mouth of the Straits of Malacca, and south of the Malay country, was the spot to accomplish this project; and there he accordingly, in February, 1819, hoisted the British flag. This settlement has gone on prospering and increasing: its population, its imports and exports, are wonderfully enlarged. The articles dealt in are all those of China, the Oriental islands, and the Indo-Chinese countries, with British cottons, and other manufactures. This station, as Raffles justly observes, "is by far the most important station in the East; and as far as naval superiority and commercial interests are concerned, of much higher value than whole continents of territory."

For this flourishing settlement Sir Stamford framed a code of laws and regulations grounded on the simplest principles of equity and justice. Slavery, gaming, and cock-fighting were expressly interdicted. He likewise founded an educational institution, the object of which was, "the cultivation of Chinese and Malayan literature, with the improvement of the moral and intellectual condition of the people."

We must now conclude our notice of this excellent man's life by adverting to the calamities which came thickly upon him in his latter days. His incessant activity of body and mind, in a latitude so near the equator, made him experience at intervals serious attacks of fever: Lady Raffles too suffered much from illness; so that their thoughts naturally began to turn towards home. But, ere arrangements could be made for a passage to England, four of their five children died, and the youngest was sent away at once to England in the charge of an old nurse.

Broken down by sickness and affliction, all their friends day after day dying around them, Sir Stamford resolved to embark for England, and took his passage on the 4th of February, 1824, in the Fame. This ship took fire the same night by the carelessness of the steward. The crew and passengers with difficulty saved themselves in the boats, and Sir Stamford was obliged to remain at Bencoolen till the following April. By this disastrous event he entirely lost the greatest part of the extensive collection which he had formed of animals and plants, as well as many volumes of manuscripts and drawings relative to the civil and natural history of nearly every island in the Malayan Archipelago: besides this, which might be considered as a public misfortune, his own pecuniary loss by the burning of the ship amounted to upwards of 20,000*l*.

After his return to England, he founded the present Zoological Society, of which he was the first president. His health, however, never recovered the shock which it had sustained, and he died in 1826, before he had time to arrange the numerous materials which he had collected in the East: he was only forty-five years old at his decease. We have already given a fuller account of the misfortunes of his last years at p. 85, Vol. IV., of this work.

CONVERSATION is the daughter of reasoning, the mother of knowledge, the health of the soul, the commerce of hearts, the bond of friendship, the nourishment of content, and the occupation of men of wit.

LONDON:
JOHN WILLIAM PARKER, WEST STRAND.
PUBLISHED IN WEEKLY NUMBERS, PRICE ONE PENNY, AND IN MONTHLY PARTS, PRICE SIXPENCE.
Sold by all Booksellers and Newsvenders in the Kingdom.

THE

Saturday Magazine.

No. 635. MAY 28TH, 1842. { PRICE ONE PENNY.

JAVANESE SKETCHES.

ANYER, PORT ON THE NORTHERN COAST.

I. GEOGRAPHICAL SKETCH.

THE land known to Europeans by the name of JAVA, and to the natives under those of Tana (the land), Jáwa, or Nusa, (the island) is one of the largest of the Sunda Islands. It is situated between 5° 52′ and 8° 4′ S. lat., and between 105° 11′ and 114° 13′ E. long. On the south and west it is washed by the Indian Ocean; on the north-west by a channel called the Straits of Sunda, which separates it from Sumatra, at a distance in one point of only fourteen miles; and on the south-east by the Straits of Báli, only two miles wide, which separate it from the island of that name. The area of Java is estimated at 50,000 square miles, or about that of England.

Numerous small islands are scattered in the immediate vicinity of Java, particularly along the northern coast, which together with the projecting points and headlands inclosing the different bays contribute to form harbours of various capacities. The most important of these islands is Madúra, which is separated from the mainland of Java by a very narrow strait. This island and the small islands lying to the east are considered as dependencies of Java.

The island is for the most part in the possession of the Dutch, who claim the whole northern coast, as well as the districts situated at both extremities of the island. The southern coast and the adjacent countries (with the exception of the small district of Pachitan, recently ceded to the European government,) are divided between two native sovereigns, viz., the Susuhúnan, or emperor, who resides at Sura-kerta, on the Solo River, and the Sultan, who resides at Yug'ya-kerta in the province of Matarem. These native provinces, comprising several of the richest districts, form about one-fourth of the whole island.

The Dutch possessions are divided into seventeen provinces. To the west of 108° 30′ are the Bantam, Batavia, Buitenzorg and Preanger districts, and Cheribon. The Preanger districts are ruled by native hereditary princes, who pay tribute to the Dutch. The principal towns in this country are situated near the shores. Sirang or Ceram, where the governor of Bantam resides, is some miles inland, the ancient town of Bantam having been abandoned. Batavia, also, has been partly abandoned on account of its insalubrity. In the suburbs of this city is Molenvliet, built in the Dutch style, along a wide canal, and mostly inhabited by Europeans: Ryswick is the seat of the governor-general, Weltefreden the centre of the military force, and Noordwyck a trading town. Cheribon is also a thriving town, with a good roadstead. Forty miles from Batavia, and at the foot of the volcano of Pangerango, is the village of Buitenzorg, containing the summer residence of the governor, and many villas. A navigable canal unites this village with the harbour of Batavia. Chanjur is the chief town in the Preanger districts.

To the east of 108° 30′, as far as the Strait of Madúra, occur the nine provinces of Tegal and Brebes, Pakalongan, Kedu, Samárang, Japara, Rembang, Gresek, and Surabaya. They form the most fertile portion of the Dutch dominions, and contain the vale of Kedu, the flats of Demák, and the plain of Surabaya. Proceeding from west to east we find the following towns:—Samárang, a populous town, with an extensive commerce, in which foreign vessels are allowed to participate. The next town is Rembang. Surabaya follows next: it is situated on the Straits of Madúra, which form an excellent harbour, which is open to foreign vessels. This is the most populous and thriving town in the island.

The eastern peninsula, which extends to the Strait of

Bali, is mountainous and less fertile than any other part of the island. It contains the provinces of Passaruan, Besuki, and Banyuwangi. On the sea-coast is a small town named Passaruan.

At nearly all seasons of the year vessels of any burthen can approach all the principal stations, at a convenient distance for the barter of their merchandize. The sea being usually smooth, and the weather moderate, the native vessels and small craft always find sufficient shelter at the change of the monsoon, by running under some of the numerous islands scattered along this coast, or passing up the rivers, which, though in general difficult of entrance on account of their bars, are for the most part navigable to such vessels, as far up as the maritime capitals, through which they run. The south coast, on account of its exposure to the open ocean, the consequent high swell or surf which breaks on it, and its general want of good anchorage, is seldom visited by shipping. But Raffles is of opinion that even here good harbours might be found, were it desirable to attract commerce to this side of the island.

On proceeding to the interior of the island the traveller is struck with the bold outline and prominent features of its scenery. An uninterrupted series of large mountains, varying in height from five to twelve thousand feet, and exhibiting by their round base or pointed tops, their volcanic origin, extend through the whole length of the island. Raffles counted thirty-eight of these volcanic peaks.

They all rise from a plain but little elevated above the level of the sea, and each must, with very few exceptions, be considered as a separate mountain, raised by a cause independent of that which produced the others. Most of them have been formed at a very remote period, and are covered by the vegetation of many ages; but the indications and remains of their former irruptions are numerous and unequivocal. The craters of several are completely extinct; those of others contain small apertures, which continually discharge sulphureous vapours or smoke.

Many of them have had irruptions during late years, which have caused great loss of life and property.

Besides these larger mountains, there are extensive ranges of hills which traverse the country in various directions; indeed the surface of the island in general, except on the sea-coast, is undulating and uneven.

A mountainous country is seldom deficient in rivers: accordingly, Java is singularly favoured in the number of its streams. The size of the island does not admit of the formation of large rivers, but there are probably fifty, that in the wet season, float down rafts loaded with timber and other rough produce of the country. Five or six are always navigable to the distance of some miles from the coast. The minor streams, so precious to the agriculturist, must be reckoned by hundreds if not thousands.

The Solo river rises near the coast in the mountains of Damong, and, collecting many tributary waters, flows northward to Sura-kerta, where its stream is of considerable depth and breadth; it then bends towards the east, and is joined at Awi by the Inadion. It enters the Strait of Madúra by two mouths at Gresek and Sidayu. From Sura-kerta to Gresek it is stated to run a winding course of 356 miles, during which the navigation is free, and in the rainy season admits of boats of considerable size, which convey the produce of an extensive tract of country to the sea; and, except during the months of August, September and October, and in unusually dry seasons, it bears down boats of middling or small size during the whole year, from a considerable distance above Sura-kerta.

The river second in magnitude is Surabaya: its course is nearly circular, and its source and mouth are situated almost in the same latitude. It rises at the base of the volcano Arjúna, flows around Mount Kawi, and is a large river at Kediri, which name it then assumes. From the capital of this district to its mouths it is navigable for large boats, and its course is steady and uninterrupted. Having crossed the district of Wirasáber and Jápan, it enters that of Surabaya. It discharges itself into the ocean through a tolerably extensive and very fertile delta, formed by five separate rivers.

Both the western and northern districts have their principal rivers, and most of them are navigable up to the maritime capitals for native vessels of considerable burthen:—

But they all have the disadvantage of being partially blocked up at their discharge by extensive bars and mud-banks, an evil which is extending with the increase of agriculture, by reason of the quantity of soil necessarily washed down in the process of irrigating the land for the rice cultivation. Most of them require the application of jetties or piers to deepen the passages at their entrance.

There are no lakes of any considerable size in Java, but some low lands are converted into swamps in the wet season.

One the northern coast the general aspect of Java is low, often swampy, and overgrown with mangrove-trees and bushes. The southern coast consists of very high perpendicular rocks and cliffs. The interior presents innumerable ranges of hills which serve to form and confine plains and valleys of various elevations and extent. On the northern side the ascent from the sea-coast is gradual, but in other parts, where the hilly country is nearer to the coast, the ascent is more abrupt. The interior and southern provinces may be reckoned among the most romantic and diversified in the world;

Uniting all the rich and magnificent scenery, which waving forests, never-failing streams, and constant verdure can present, heightened by a pure atmosphere, and the glowing tints of a tropical sun.

Quitting the low coasts of the north, in many parts unhealthy, the traveller can hardly advance five miles inland without feeling a sensible improvement in the atmosphere and climate. As he proceeds, at every step he breathes a purer air and surveys a brighter scene. At length he reaches the high-lands. Here the noblest forms of nature are tempered by the rural arts of man: stupendous mountains, clothed with abundant harvests, impetuous cataracts tamed to the peasant's will. Here is perpetual verdure; here are tints of the brightest hue. In the hottest season the air retains its freshness; in the driest, the innumerable rills and rivulets preserve much of their water. This the mountain farmer directs in endless conduits and canals to irrigate the land, which he has laid out in terraces for its reception; it then descends to the plains, and spreads fertility wherever it flows, till at last, by numerous outlets, it discharges itself into the sea.

In an island of such extent and variety of surface, the soil is necessarily various, but it is generally rich and remarkably deep; owing probably to the exclusively volcanic constitution of the country, and the constant accession of new mould, which is washed down the sides of the numerous mountains. It is much richer than the soil of the Malayan countries in general, and resembles the richest garden-mould of Europe: whenever it can be exposed to the inundations necessary to the growth of rice, it will yield without manure, and without impoverishment, one heavy and one light crop in the year: even the poorest soil repays the labour of cultivation. The red and very light soil of the western districts is generally considered inferior to the dark brown and stiffer soil which prevails in the eastern. The best soil is usually found near the beds of rivers, in the valleys, and on the slopes of the largest mountains; the worst on the ranges of low calcareous hills, which traverse different parts of the island.

In these regions, situated within about ten degrees of the equator, one eternal summer reigns, and the seasons are not recognised as hot and cold, but as wet and dry. In Java the seasons are regulated by the periodical winds. The period of the setting in of these winds is not determinable within a few weeks; but generally the westerly winds, always accompanied with rain, occur in October, become more steady in November and December, and

gradually subside; till in March or April, they are succeeded by the easterly winds and fair weather, which continue for the remaining half year. The heaviest rains occur in December and January, and the driest weather in July and August, when the nights are coldest and the days hottest. Hurricanes are unknown in Java, but thunder-storms are frequent, and the lightning is extremely vivid

In the vicinity of the hills, and elsewhere during the dry season, seldom a day passes without thunder and lightning; and although these grand exhibitions of nature cause less consternation, in general, within the tropics, than beyond them, it cannot be denied that they are destructive of many lives. Earthquakes are to be expected in a volcanic country, and are frequent in the vicinity of the volcanoes; but the European towns have never sustained any serious injury from them.

On the low northern shores the mean annual heat is 78°, but in the dry season the thermometer rises as high as 90°, and even higher in the afternoon. Its most usual range is from 70° to 74° at evening and morning, and from 83° to 85° in the afternoon. But one of the great advantages afforded by the physical constitution of this island is, that from the sea-shore to the elevated interior there is a regular diminution of temperature, at the rate of 2° or 3° for every ten miles. The mean temperature on the elevated plains is probably not more than 66° or 68°. A temperature of 72° is rarely known there. On the summits of the peaks it falls below freezing-point: ice as thick as a Spanish dollar has been found, and hoar-frost (called "the poisonous dew" by the natives), has been noticed on the vegetation of these higher regions.

Java was formerly considered one of the most unhealthy countries of the globe; a character belonging certainly to the greatest portion of the low coast along the Java sea; but the general inference drawn by professional men from the experience which the occupation of the island by the British has afforded, is, that in point of salubrity Java stands on a level with the healthiest parts of British India, or of any tropical country in the world.

The climate of the city of Batavia has ever been considered as one of the most baneful in the world. "It has even been designated the storehouse of disease; with how much justice, is too wofully demonstrated by the writings of those visitors who have survived its perils, and the records of the Dutch East India Company itself." Raynal states that between the years 1714 and 1776 there perished in the hospitals of Batavia above 87,000 soldiers and sailors. It appears also from the Dutch records that the total amount of deaths in this city, from the year 1730 to 1752, was more than a million.

To those who are acquainted with the manner in which the affairs of the Dutch East India Company were managed abroad, there will perhaps be no difficulty in laying rather at the door of the colonists, than of the nation, the crime of maintaining a commercial monopoly, at such a dreadful expense of lives as resulted from confining the European population within the narrow walls of this unhealthy city. That the sacrifice was made for that object, or to speak more correctly, under that pretext, for the private interests of the colonists who were entrusted with its details, can scarcely be doubted. From the moment the walls of the city were demolished, the draw-bridges let down, and free egress and ingress to and from the country was permitted, the population began to migrate to a more healthy spot, and they had not to go above one or two miles beyond the precincts before they found themselves in a different climate. But this indulgence, as it gave the inhabitants a purer air, so it gave them a clearer insight into the resources of the country, and notions of a freer commerce, which, of all things, it was the object of the local government and its officers to limit or suppress.

Necessity might have first determined the choice of the spot for the European capital; but a perseverance in the policy of confining the European population within its walls, after so many direful warnings of its insalubrity, cannot but lead to the inference, that either the monopoly of the trade was considered a greater object to the nation than the lives of the inhabitants, or that the more liberal views of the government were defeated by the weakness or corruption of its agents.

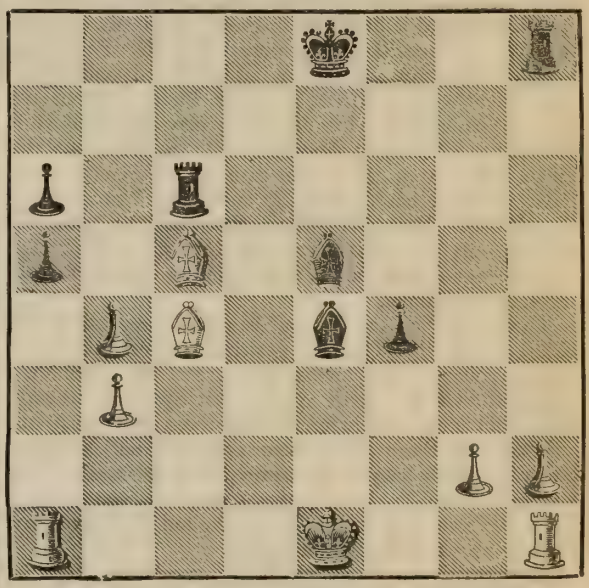
EASY LESSONS IN CHESS.

IV.

ALTHOUGH the move of the King is limited to one square at a time, yet, by a peculiar privilege, which, under certain conditions, may be exercised once during the game, a compound move is allowed, whereby the King moves over two squares. This compound move is made by playing K. R. or Q. R. up to the K., and then placing the K. on the other side of the R. thus moved. This is called CASTLING, or to CASTLE THE KING, and its object is generally to secure to the royal piece a place of greater safety, as also to bring a Rook into play. Sometimes, however, a player castles in order to escape from an attack, and, in such case, he will castle on his King's side, *i.e.*, with K. R; or, on his Queen's side, *i.e.*, with Q. R., as may best suit his purpose.

The conditions under which castling is allowed are as follow:—1. The King must not be in check. 2. The King must not have been moved. 3. The Rook must not have been moved. 4. There must be no piece, either of your own or of your adversary, between the King and the Rook. 5. The King must not pass over, or to any square, attacked by one of your adversary's pieces or pawns.

The following diagram will serve to illustrate the important operation of castling.



In this position you are at liberty to castle either with your K. R., or with your Q. R. To castle with your K. R., or, on your King's side, you first play your K. R. to K. B. square, and then place your K. on K. Knt. square; this completes the operation of castling. To castle on your Queen's side, or with Q. R., you first play that piece to Queen sq. and then place your K. on Q. B. sq. Observe that, although your Q. R. is under the attack of your adversary's K. B., and although your Q. Knt sq. is commanded by his Q. B., yet you can still castle on your Queen's side, because the law which forbids the King, in castling, to pass over any square attacked by one of your adversary's pieces or pawns, is limited to the King only, and does not apply to the Rook.

You will observe that your adversary cannot castle on his King's side, because the K. B. sq., over which his King must pass, is commanded by your Q. B. and the

K. Knt. sq., to which he must pass, is commanded by your K. B. Nor can he castle on the Queen's side, because his Q. R. has been moved.

There are several peculiarities respecting the Pawns, with which you must become acquainted. Young players are apt to imagine that, because the supply of Pawns is liberal, and their value much less than that of the pieces, that they need not be greatly regarded. But the fact is, that to play the Pawns well is almost the same thing as to play chess well: it is the most refined and difficult part of the game, and Philidor owed much of his excellence to the surpassing skill with which he manœuvred his Pawns. We shall have abundant examples of the value of Pawns hereafter: at present, our information will be confined chiefly to some of their technicalities.

The names of the Pawns K. P., Q. P., K. B. P., &c., you are already acquainted with: other terms are in frequent use, such as Pawn takes Pawn *en passant:* Centre Pawns; Doubled Pawn; Passed Pawn; Isolated Pawn; to queen a Pawn; or, to advance a Pawn to Queen; To fork with a Pawn.

With respect to the first term, P. takes P. *en passant,* you know that the move of the Pawn is limited to one square forward when not capturing, and to one square obliquely forward when it captures. It has also been stated, that the Pawn is allowed to move, either one or two steps forward, at its *first* move; but when, in moving two steps, it passes over a square attacked by one of your adversary's Pawns, he has the option either of allowing the Pawn to be moved to its full extent, or of capturing it with his Pawn, just as if you had moved your Pawn but one square. For example, your Q. P. being unmoved, place a black Pawn on your adversary's K. fifth sq., and another black Pawn on his Q. B. fifth sq. In this position you may move Q. Pawn one square or two squares—if you move it only one sq. it can evidently be captured by either Pawn—and if you move it two squares your adversary may also capture it with either Pawn, just the same as if you had moved the Pawn but one sq., in which case he will remove your Pawn from the board, and play one of his Pawns to your Q. third sq. Remember that a Pawn may be taken *en passant* only by a Pawn and not by a piece; and that the privilege ceases, unless advantage be taken of it at the very next move.

The term "centre Pawns" is usually applied to the K. P. and Q. P. The best position they can occupy at the beginning of the game is the centre of the board, viz., K. fourth, and Q. fourth squares; but, against good play, much skill is required in maintaining them in this position.

When one Pawn stands before another on the same file, and both belong to the same player, it is called "a doubled Pawn." In the above diagram you have a doubled Pawn at your Q. Knt's. 4th, and your adversary has one at his Q. R. fourth square.

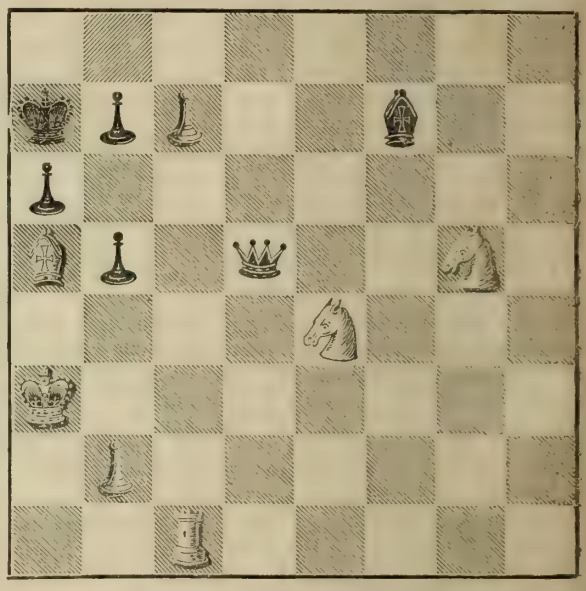
A passed Pawn is one which has no adverse Pawn in front of it, either on the same file, or advancing towards it on either of the adjoining files. Suppose you have a Pawn on your K. B's. file, and your adversary has no Pawn, either on his King's file or K. Knt.'s file, your Pawn is then said to be passed. Such a Pawn is very valuable because, in order to prevent it from being advanced to Queen, your adversary must oppose or capture it with a piece; in which case, if your Pawn be properly defended, you win a piece for a Pawn.

When a Pawn is entirely separated from other pawns it is said to be "isolated." You must be careful how you allow your Pawns to become isolated, because when in this condition they can be defended only by pieces; and these ought to be used rather as active warriors than as passive sentinels. A skilful player, however, will often be willing to isolate a pawn, if, at the same time, he "passes" it. In the diagrams which accompany this lesson you will find examples of isolated Pawns.

When a Pawn is advanced to the eighth square of the file it is said to be "queened," in which case you remove it from the square, and place thereon a piece in its stead.

The following problem will illustrate the advantage of the passed Pawn, and serve to remind you of a fact of which amateurs are frequently ignorant, *i.e.*, that in queening a Pawn, such Pawn need not necessarily be exchanged for a Queen. You may claim a Rook, or a Bishop, or a Knight. And this privilege is allowed even though all the pieces remain on the board. It follows, therefore, that you may have two or more pieces, and three or more Rooks, Bishops, or Knights. Remember that the promotion of the Pawn is the immediate consequence of its attaining the eighth square. A move cannot be made until this promotion is made.

In this problem, if black have the move, he can checkmate you immediately, or, "on the move," as it is called. Endeavour to find out how he can do this. But, white having to move, you can force the mate in three moves.

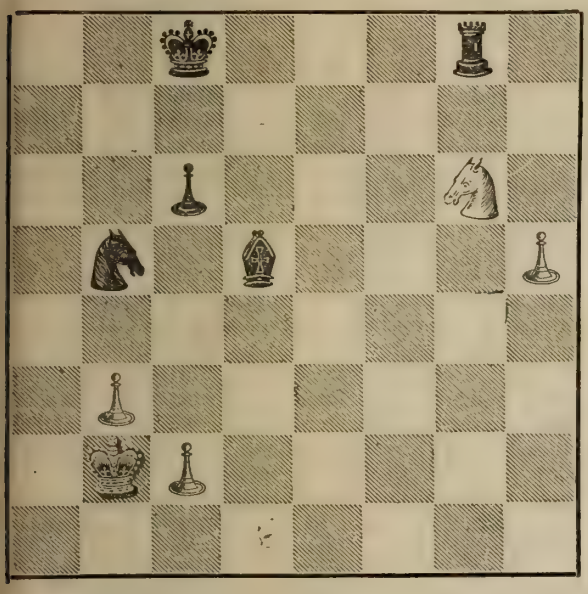


You first sacrifice your Bishop in order to get the adverse King into such a position that the mate can be effected in the shortest way. Therefore, by checking with the B. at Q. Knt. sixth, the King has the choice of moving to his Q. R. sq., or of capturing your B. If he move to his Q. R. sq. your advanced Pawn moves to Queen, becomes a Queen, and gives check-mate. His best move (when acting on the defensive, that which will prolong the game is generally called the best move), is to take the B., which he does accordingly. Now, although a Queen is the most valuable piece to get in exchange for a Pawn, yet it is not always the most advantageous. In the present case, if you claim a Queen for your Pawn, she will be of no use to you, because she does not give check, and your adversary can mate you if you cease to check him. To check him, by playing your Rook to Q. B. sixth is of no use, because the R. can be captured by K. or by Q. You, therefore, queen your Pawn, and, instead of claiming a Queen, you take a Knight, which thus gives check. He cannot capture the Knight, and has only one vacant square to which his King can move, because you will observe that your newly-created Knight not only checks the K. at his Q. Knt. third, but also commands his Q. R. second. His K. must, therefore, move to Q. R. fourth sq., when you can mate him immediately by a move which you will readily discover.

The following diagram illustrates a power which belongs to the Pawn and the Knight, of attacking two men at once: this is called *forking* them. For example, by,

playing your Knight to K. seventh, you fork your adversary's K. and R. He must move his King out of check, and you capture the Rook: should he retake with his B., you are then said to *win the exchange*, a term which is used when you gain a Rook, in exchange for a Knight or a Bishop.

The power of forking also applies to the Pawn. In the above diagram, by playing Q. B. P. two sq. you fork his Kt. and B.: he cannot save both, and must either lose his Kt. by moving away his B., or, by taking the Pawn, lose his B. for a P.



ORANGES AND COFFEE.

Of all the new enjoyments of which the knowledge is acquired by a visit to the intertropical regions, those that reach us through a sense which in the Old World is productive of as many painful as pleasurable emotions are, in my opinion, the most exquisite. Without leaving Europe, a traveller may learn how delightful it is to take his early walk in an orange-grove during the season when the trees are in bloom; the gardens of the Tuilleries may give him a faint idea of it just before the ancient denizens of the *orangerie* have been despoiled of their crop of blossoms that the distiller may convert them into orange-flower water. But the fragrance of the Tuilleries is as inferior to that of the Moorish gardens of the Alcazar at Seville as these last, with all the care bestowed on them, are excelled by some neglected orange-grove in Cuba or St. Domingo. Nor is the rich fragrance of the orange-grove to be compared for a moment with the aromatic odours of a coffee-plantation, when its hundred thousand trees have just thrown out their unrivalled display of jessamine-like flowers, reminding you of what you may have read in Eastern fable of the perfumes of Araby the Blest.—Turnbull's *Cuba*.

Few will deliberately maintain that the acquisition of wealth, individual or natural, is the principal ingredient in human happiness. The rational moralist and the pious Christian will agree that the enjoyments which wealth affords are generally overrated, and the true welfare of man consists not in the extent of his possessions, or the gratifications they afford, but in the perfection of his moral and intellectual nature, and the improvement and employments of his active powers. At the same time the stoical doctrine which ascribes no value whatever to external enjoyments is inconsistent with the present state of humanity. The bountiful productions of nature are intended as a source of enjoyment, while the active powers we are endued with enable us to diversify and enlarge, while the exertion made for their attainment tends to improve these powers. The abundance of articles subservient to the comfort and convenience of life, provided they be not misapplied to intemperance, affords no inconsiderable addition to human happiness.—Hamilton's *Progress of Society*.

THE CARRIER-PIGEON.

The Carrier-Pigeon, (*Columba tabellaria.*)

This interesting bird has been known and celebrated from a remote period of antiquity, and nowhere has it been so extensively used as a means of carrying on epistolary correspondence as in that land of wonders and of poetry, the East. There, the vast distance of one inhabited district from another, and the imperfect nature of other means of communication, have contributed to render the carrier-pigeon a real treasure to the land. Before we proceed to describe the method of training and employing this bird as a messenger, we must notice its form and habits.

The carrier is a larger bird than our common pigeon, being about fifteen inches in length, and a pound and a quarter in weight. The plumage is remarkably compact, and is subject to much variety of colour; but may be described as in general either dun-colour or black. Blue and pie-bald varieties are occasionally seen, and are much prized by the curious in birds. The neck is long, and the pectoral muscles are very large, denoting a power of vigorous and long-continued flight. An appendage of naked skin extends across the bill, and hangs down as a sort of wattle on each side of the lower mandible. This skin is of a whitish colour, and has a rough and warty appearance. According to its size and shape, the amateurs of carrier-pigeons estimate the value of the bird. They consider those pigeons the best that have this appendage rising high on the head, and of considerable width across the bill, and that are also distinguished by a wide circlet round the eyes destitute of feathers. The sellers of these birds sometimes employ artificial means to produce these appearances, and torture the pigeons by introducing a small piece of cork, fastened by a bit of wire beneath the skin, to enlarge its apparent width.

The instinct which renders this bird so valuable to

man is founded upon a very high degree of the *love of home*. We find the same instinct exhibited by many other animals in various ways; but, the pre-eminent degree in which it rules this particular species of pigeon causes the bird to find its way from any distance to the spot where it has reared its young, or has met with the customary gratifications of home. This natural instinct has been aided by precautionary measures on the part of man, in order that there may be no failure in the diligence and promptness of the expected messenger.

The method of training the young birds in Turkey is as follows. The person who has the charge of rearing and training them (and in that country it is a common practice to keep such a person in the seraglios of the great,) watches for the arrival of the young pigeons at their full strength of wing, and then takes them hoodwinked, or in a covered basket, to a distance of about half a mile from their home. They are there set at liberty, and if any of them fail in returning home from this short distance they are considered as valueless, and no farther trial is made of their powers; but all those that return directly and speedily are carried a mile, then two, four, eight, &c., and so on to greater and greater distances, till they will at length return with certainty from the farthest parts of the kingdom. It is obvious that in order to have messages conveyed by these birds they must be reared in one place, and then sent to the place whence they are to return with tidings. For instance, every Turkish bashaw has a basket full of these pigeons sent to him from the grand seraglio, and on the appearance of insurrection or other emergency in his district, he has only to let loose one of the pigeons with a letter to communicate the tidings. He braces a letter under one of the wings, without in the least incommoding the bird, or hindering its flight; but lest this messenger should be shot, or struck by a hawk, five or six are generally dispatched with similar messages, and thus communications are made in the most speedy manner that could possibly be contrived. In the fourteenth century the dispatches sent by carrier-pigeons to various parts of Turkey amounted to a regular system of posting. Slight towers were built at thirty or forty miles' distance from each other, and in these towers sentinels kept watch to receive the birds, and transmit the intelligence which they had brought, by other birds. The notice was inscribed on a thin slip of paper, inclosed in a small gold box, nearly as thin as the paper itself, and tied round the neck of the bird. The hour of arrival and departure was marked at each successive tower, and for greater security a duplicate was always dispatched two hours after the first. But the mode generally employed in conveying intelligence by these birds, is to write the necessary information on very fine paper, and in the East there is a peculiar sort adapted to this purpose, and called *bird-paper*, and to place it lengthwise under the wing, fastening it with a pin and taking precautions to prevent the pin from pricking the bird, and also to keep the paper from becoming inflated with air.

The use of the carrier-pigeon as a messenger was celebrated by the poets of Arabia, Greece, and Rome. Historians also make frequent mention of it, as bearing intelligence with wonderful rapidity, and as affording the most important benefits to besieged cities. Ælian mentions that when Taurostheus was victor at the Olympic games, a carrier-pigeon bore the intelligence to his father with great rapidity. Pliny relates that at the siege of Modena a correspondence was carried on, by means of these birds, between Decimus Brutus and Hirtius. "Of what avail," says he, "were sentinels, circumvallations, or nets obstructing the rivers, when intelligence could be conveyed by aërial messengers?" Carrier-pigeons were also extensively employed in the time of the Crusades, and instances are given where the birds sent out by the besieged were captured by the besieging parties, and let loose again, with a message calculated to deceive those to whom they were sent. In such instances the pigeons were brought down uninjured by hawks kept for that purpose, by the parties investing the town.

These extraordinary birds have been employed to serve the purposes of commerce, as well as those of war. When the Turkey company of England was flourishing, and a number of English merchants were resident at Aleppo, carrier-pigeons were in constant employ to bring intelligence from the port to the city. The port of Scandaroon is at the distance of forty leagues from Aleppo, but this space was traversed in about three hours. The merchants who employed these birds, were in early possession of information, of which they failed not to take advantage. It is said that an Aleppo merchant having accidentally killed one of these feathered messengers, was the first to learn that there was a great scarcity of galls in England, and immediately profiting by this news, he bought up nearly the whole quantity in the market, and at once cleared a sum, which was at that time considered as a handsome fortune.

In England and the adjacent countries pigeons have been little used as messengers, in modern times, but are rather employed as a matter of curiosity, and for the purpose of deciding bets. In no very remote period, however, these birds were employed in this country to convey tidings of the fate of criminals. The place of execution for the British metropolis, was, at the period alluded to, Tyburn, and thither many criminals were conveyed, who, though the punishment of death had been awarded them, were intended to be disgraced and imprisoned, rather than to be visited with the extreme penalty of the law. Hence pardons and respites were given at the foot of the gibbet, and the uncertainty in which the relatives and friends of the condemned were kept to the last, made it a time of intense anxiety, especially when, as in former days, the criminal was frequently of somewhat elevated rank. Carrier-pigeons were therefore sent to Tyburn before the time of the expected execution, and were dismissed with the important news of life or death, as soon as all was over. But the employment of these birds among us at present, consists of little more than experiments, such as the following: on the 11th of July, 1819, thirty-two pigeons, with the word "Antwerp" marked on their wings, and which had been reared in that city, were let loose in London at seven o'clock in the morning, after having their wings countermarked with the name of the British metropolis. The same day, at noon, one arrived at home, and obtained the first prize; a quarter of an hour after another arrived, and obtained the second prize. The following day twelve others arrived, making fourteen in all; what became of the others we are not told. Another experiment was made in July, 1829, in consequence of wagers laid at Maestricht, between some merchants there, that pigeons taken to London, would, when loose, return in six hours. Forty-two pigeons were brought to London, and, after being properly marked, were thrown up at twenty-six minutes past eight in the morning. The principal wager was for ten thousand guilders, and would have been gained had any one of the birds arrived at Maestricht within six hours; but owing, as it was supposed, to heavy rain, the first did not arrive till six hours and a quarter from the time of leaving London, having nevertheless travelled at the rate of forty-five miles an hour. The second arrived in seven hours, the third in seven hours and ten minutes, the fourth in seven hours and a half, and in four days more than twenty had reached their place of destination.

There are two inferior varieties of carrier-pigeons that have been reared to a considerable extent in England; these are commonly called the *dragoon* and the *horseman*. The author of a treatise on domestic pigeons, published in 1765, tells us that a gentleman of his acquaintance

having a small wager depending, sent a dragoon by the stage coach to his friend at St. Edmond's-Bury, together with a note, desiring that the pigeon, two days after its arrival there, might be thrown up precisely when the town clock struck nine in the morning, which was accordingly executed, and the pigeon arrived in London, and flew to the sign of the Bull Inn, in Bishopsgate Street, into the loft, and was there shown at half-past eleven o'clock the same morning on which he had been thrown up at St. Edmond's-Bury, having flown seventy-two miles in two hours and a half.

Recent experiments seem to establish forty miles an hour, or a thousand miles in a day, as the average flight of the carrier-pigeon.

GOLD AND IRON—A COMPARISON.

Many persons find it difficult to explain why those countries which possess gold and silver mines are not uniformly rich; they read of the conquest of America by the Spaniards, and of the numerous and extensive mines of precious metal which came into the possession of the conquerors; they observe also how willing persons of all classes are to exchange a large quantity of most other metals for a small amount of gold; and yet those countries which produce gold and silver are politically, commercially, and socially, poor. Why is this? Many causes operate to produce the effect; but on the present occasion we select a mode of explanation which is calculated to find favour with a people who owe their riches to well-directed industry and well-regulated commerce.

So long as the metals, or their ores, remain buried in the earth, their practical value is nothing, but the moment they are brought to its surface they begin to acquire a gradual and perceptible value, because the first step is taken towards giving them a useful application; but when the metal has been extracted from the ore its value becomes indefinitely extended, because it can then be moulded and shaped into some of those numerous articles which the skill of man has contrived.

We see then that the crude ore becomes invested with value by being raised to the surface of the earth: the labour and skill employed in extracting the pure metal greatly enhances the value: if we now trace the metal through a few of its subsequent transformations, we shall find its value to increase in proportion to the amount of labour and skill bestowed upon it.

One pound of iron, in the state in which it leaves the ore, is worth about a half-penny; and as a half-penny weighs but half an ounce, the copper of which it is formed is thus worth about about thirty times an equal weight of iron. The chief cause of this difference is —not that the copper is in itself so much more valuable than iron—but that so much larger an amount of labour has been bestowed upon it than upon the iron; it has been extracted from the mine, separated from the earthy and other impurities, brought to the pure metallic form, rolled into a thin sheet, cut into small circular pieces, and then stamped with the devices which give it the denomination of a half-penny. But great as is this difference between the value of iron and copper, it sinks into insignificance when compared with the difference between iron and gold. At the rate of 6*l.* per ton (at which pig-iron has been often sold of late years), one sovereign would purchase about three hundred and seventy pounds weight of iron; but as it requires about forty-six sovereigns to make one pound weight of gold (omitting the value of the alloy), we must multiply the quantity to this extent, and we shall thus find that one pound weight troy of gold is worth about seventeen thousand times as much as an equal weight of pig-iron, and as the latter is sold by avoirdupois weight, in which the pound is greater than the troy pound, the real marketable difference in price is still more extensive than that here indicated. The value of silver being between a fifteenth and a sixteenth part of that of gold, we find it to be somewhat more than a thousand times that of the iron; and thus we arrive at the result, that coined copper, silver, and gold, are worth, respectively, about thirty, ten or eleven hundred, and seventeen thousand times as much as equal weights of pig-iron.

It is by hearing of such calculations as these that we become insensibly impressed with the idea of vast wealth, in relation to the gold and silver mining districts of America, and we are apt to wonder how such countries can possibly be otherwise than rich and flourishing. But before this question can be rightly understood it is necessary to trace the crude iron to some of its subsequent forms, and see how it becomes altered. Anvils, vices, and a large number of articles made of iron, and in which no very great nicety of workmanship is required, are sold at from fourteen to twenty shillings per cwt.: this is at the rate of from three halfpence to two pence per pound, so that the value of the iron has been increased three or four fold by the labour of forming it into these articles. But when we come to the more carefully manufactured articles of iron, and especially in that form to which we give the name of steel, the value of a pound of metal increases in a prodigious ratio. In the finest kinds of working tools, in cutlery, and in numerous small articles of steel, this increase is very observable. Generally speaking, each single article contains a very small weight of metal, and the purchaser pays for the labour and the skill bestowed, rather than for the metal itself. Many of such articles, as well as others made of other metals, are mentioned in an Act of Parliament of the reign of Henry the Seventh, passed for the prohibition of the importation of manufactured articles from abroad; whereby "merchaunt straungers" were forbidden to bring into England "mans gyrdylles, harynis wrought for gyrdylles, poynts, laces of lede, purses, pouches, pynnes, knyvys, hangers, taylour-sherys, sesors, yrens, cobords, tonges, fyer-forkes, grydyrens, grydyren stocks, cocks, keys, hinges, ayny betyn gold, or betyn silver, horse harneys, bittes, storoppes, bokelles, chaynes, latyn nayles with yren shonkes, currets, stondynge condlestickes, hongying condlestickes, holy-water scoppers, chafyinge dyshes, hongying lavers, curten rynges, clospes for gloves, bokelles for shoys (*i. e.* shoes), spones of tynn and lede, cheynes of wyre, as well laten as of silvere," &c. Most of the articles here enumerated, and which are now made at Birmingham and Sheffield, would well illustrate the value which labour imparts to raw material.

It is not perhaps generally known that sewing needles, cheap as they are, in some instances attain a value which brings them on a level with the "precious" metals. A practical writer on this subject says, that needles of the most exquisite delicacy and finish exhibit one of the rarest proofs of the value conferred by manual labour upon a material, in its original state of small nominal price, for some of the finest sorts are worth considerably more than their weight in gold. The same writer, when speaking of the manufacture of the springs of watches, makes a statement in relation to the value which labour imparts to raw material almost inconceivable:—

> Both the main and the hair-springs of watches are made of steel, first drawn into wire. In the former description of spring, the workman gives to the material its wonderful elasticity by hammering it out upon an anvil; it is then ground, hardened, coiled, and tempered by blueing as we see it. The manufacture of the latter article has frequently been selected as an illustration of the extent to which the value of a material of small intrinsic worth may be raised by the application of industry and ingenuity. A pound of crude iron costs one half-penny; it is converted into steel; that steel is made into watch-springs, every one of which is sold for half-a-guinea, and weighs only the tenth of a grain; after deducting for waste, there are in the pound weight

seven thousand grains; it therefore affords steel for seventy thousand watch springs, the value of which, at half-a-guinea each, is thirty-five thousand guineas!

It will thus be seen, even if we confine our attention to the manufacture of needles only, that the relative values of gold and iron really depend on the labour bestowed upon them, rather than upon any intrinsic value in the metals themselves. But still, as a pound of gold is worth many thousand times the value of a pound of iron in an equally un-manufactured state, it would seem that the gold-producing countries ought to be surpassingly rich. It is found, however, that the wages and maintenance of the miners employed in the gold and silver mines, the apparatus, generally of a rude and inefficient kind, which they employ, the want of good roads for the conveyance of the gold and ore from the mines to the shipping-ports, and the length of time consumed in the preparation of a small quantity of gold, eat into the profits of the mining proprietor so largely as to dissipate the dreams of enormous wealth which are often entertained. The same principles do in fact regulate the profits of a mine of gold or silver as one of iron or copper; for the owner has to pay for the labour expended in the extraction of the metal, and it is easily conceivable that a mine of gold may be absolutely valueless to the proprietor, by the quantity of metal being so small, and the depth of the mine so great, as to consume the entire value of the gold in the wages of labour. This circumstance has in fact often led to the abandonment of veins or mines of gold and silver, not because the metal has ceased to be found, but because the expense of procuring would nearly or quite equal the price obtained for it.

We see therefore that in estimating the wealth of such countries as Mexico and Peru, the possession of gold and silver mines is not incompatible with national poverty; for if the general industry and manufacturing energy of the inhabitants is in a languid state, the mines of precious metal will not alone lead to national prosperity. Humboldt estimated the total value of gold and silver brought from America at the beginning, of the present century, at about nine millions sterling annually; and Mr. Jacob supposed the value to be not much above four millions annually, between 1809 and 1829. Even if we take the highest of these estimates, what is it compared with the value of some articles of English manufacture? Our cotton goods alone amount to the value of thirty millions sterling annually, and the iron produced, even in the rough state of bars and rods, has been estimated at six millions annually.

So far from a gold-producing country being rich and prosperous, it would almost seem that in the possession of that which all men covet, is the source of much of its poverty and misery. The horrid details which abound in the history of South America result from the "cursed lust for gold;" and the desolate appearance of many tracts of that wide continent has been produced by the search for that metal. Dr. Walsh mentions that at a very early period two parties meeting on the banks of the river, where San José was afterwards built, instead of agreeing in their objects, and pursuing together their operations, set upon each other like famished tigers, impelled by a hunger still more fierce—the cursed lust of gold. A bloody encounter ensued, in which many were killed on both sides, and the river was from that time called the Rio das Mortes, or the River of Deaths.

The vicinity of this river everywhere attests the extensive search for gold formerly pursued here, as it was for a length of time considered one of the richest parts of Brazil, from the profusion of the precious metal found on its surface. All the banks of the stream are furrowed out in a most extraordinary manner, so as to be altogether unaccountable to one unacquainted with the cause. The whole of the vegetable mould was washed away, and nothing remained but a red earth, cut into square channels, like troughs, with a narrow ridge interposed between them. Above was conducted a head stream of water, let down through these troughs, which were all on an inclined plane. The lighter parts of the clay were washed away, and the gold remained behind.

Dr. Walsh visited the farm of a gentleman who had been seduced from agricultural operations by the indications of the presence of gold upon his lands. After describing the modes of collecting the gold dust, and extracting the precious metal, he examines the matter with a commercial eye. At this "harvest home" of gold, as he aptly terms it, the quantity collected was about four pounds' weight, which at eighty shillings per ounce, would give two hundred pounds sterling, apparently a rich, but in reality, a very unprofitable and ruinous mode of farming. The proprietor had seven or eight blacks daily employed, for three hundred days, collecting the gold dust: these blacks he first bought, and then fed, and clothed and supported, which left in the end but little or no real profit. But by far the most ruinous effect was that produced on his farm.

As we passed through it, for several hundred acres every green thing had disappeared, and left behind a red desert, of the most irksome and barren aspect, on which nothing hereafter would be found to grow in any given period, as no new soil is formed, and the old workings appear as recent as those from which the vegetable mould had been washed but yesterday: and thus, in extracting the gold from his farm, the proprietor had extracted along with it every particle of productive riches also.

Such (says Mr. Holland) is the aspect, in general, of those regions where the search for the precious metals is carried on, whether by washing the diluvial deposits, or by subterranean excavations: to the evil in the latter case has to be added the immense waste of negro life, as the auriferous soils, in most tropical climates, are peculiarly unhealthy.

In these few remarks we have purposely omitted to contrast the abundance of iron with the scarcity of gold; nor have we noticed the physical qualities of the precious metals, which impart value to them independently of their scarcity. Our object is to show that national industry is of far more value than mines of gold and silver: possessing these, a country may be very poor; whereas by well-directed industry, a value may be imparted to humble materials greatly surpassing that of the precious metals; to give in fact, in one year, to a mass of cotton fibres a value very far exceeding that of all the mines and streams of America during the same period.

The perfections of animals afford perpetual scope for reflection and improvement. We can gaze with unsated admiration on the fleet hound, the graceful colt, the frolicsome kitten, the soaring eagle, the far-seeing hawk, the majestic elephant, the brilliant peacock, the gentle fawn, the strutting cock, and the stately war-horse. Every individual of the vast host of animated creation, whether bird, beast, fish, or insect, displays qualities fitted, with unerring precision, to its wants. It fills us with amazement to discover such a variety of adaptation to the external world and to ourselves, and to find that creatures so limited should be able to maintain their place amidst a scene of such conflicting interests. Instructive, however, as the spectacle is, it becomes still more so when we reflect that the Deity has thus arranged it; that it is He who has thus adjusted the different parts to each other, and to the whole, and that to Him they owe their order, their utility, and their existence. Most thinking minds have speculated on what they should feel, were they permitted to witness the scenes of other worlds; yet how many pass through life without being once awakened to a perception of the vast expanse, the magnificence and the variety of that in which they dwell!—Dr. Mac Cormac.

LONDON:
JOHN WILLIAM PARKER, WEST STRAND.
Published in Weekly Numbers, price One Penny, and in Monthly Parts, price Sixpence.
Sold by all Booksellers and Newsvenders in the Kingdom.

THE

Saturday Magazine.

No. 636. SUPPLEMENT, MAY, 1842. { PRICE ONE PENNY.

FAC-SIMILE OF THE SAINT CHRISTOPHER, ONE OF THE EARLIEST WOOD ENGRAVINGS.

A BRIEF HISTORY OF THE FINE ARTS. No. V.

HISTORY OF ENGRAVING.

Introduction.

The art of Engraving occupies a deservedly high station among human inventions, not only on account of its extensive power of diffusing all kinds of knowledge, but also of extending the domain of the fine arts from the picture-gallery or the hall of sculpture to all classes of the community. By means of this art our rooms may be adorned with the portraits of the greatest men of all ages and all nations. It is by this art also that the paintings of the greatest masters are multiplied, and that the lovers of the polite arts are enabled to enjoy those beauties from which their distant situations seemed to have for ever debarred them; and persons of moderate fortune are thereby enabled to become possessed of much of the spirit and poetry contained in those miracles of art, which seemed to have been reserved for the temples of Italy or the cabinets of princes. "When we reflect moreover, that the engraver besides the beauties of poetical composition, and the artful ordinance of design, has to express, merely by the means of light and shade, all the various tints of colour and clear obscure,—to give a relief to each figure, and a truth to each object; that he has now to represent a sky serene and bright, and then one loaded with dark clouds; now the pure tranquil stream, and then the foaming sea tempest-driven; that here he has to express the character of the man strongly marked in his countenance, and there the minutest ornament of his dress; in a word, that he has to represent all, even the most difficult objects in nature; we cannot sufficiently admire the vast improvements in this art, and that degree of perfection to which it has at this day arrived."—*Encyclopædia Britannica.*

In the same tone of high appreciation for this art another writer well observes:—"The engraver, like the painter, has certain pictorial elements to be carefully studied and pursued, and adhered to, whatever be the vehicle by which he works. Both artists must, it is obvious, begin their course together in the same school of drawing and of chiaroscuro. Both have the same necessity for perfect acquaintance with anatomy and painting. Both are interested in expressing with truth and vigour, not the outlines only but the surfaces and textures of bodies: as also the changes which light and air, in their innumerable modifications, unfold to the observer of nature. Engraving may not inaptly be called the translation of painting into a language of which the phraseology is in many instances the same as the original; but which in many more retains nevertheless its own proper idiom: and of this idiom a good translator will always be able to avail himself. He never can arrive at such an end except by familiar acquaintance with his means; namely, with the peculiarities of the two languages in question. The work, to be properly translated from the canvass to the copper-plate, must undergo such idiomatic changes as belong to the employment of the new material. In every such work of taste, literal interpretation must not be mistaken for fidelity: otherwise a bald, and spiritless, and unsatisfactory result will be inevitable."—*Encyclopædia Metropolitana.*

Section 1. Historical Notice.

Probably no art, music excepted, can claim a priority to that of engraving; and though its inventor is unknown, there is little doubt of its existence long before the Flood. Tubal Cain, the son of Lamech, was the first artificer in metals. It is said of him that he was "the whetter or sharpener of all instruments of copper and of iron," implying thereby his great skill in metallurgy. To what degree of perfection he carried the mechanical part of his profession cannot be discovered; probably his performances were rude and simple in their forms, and rather useful than elegant. As his descendants increased, and the number of workmen multiplied, they became more skilful by experience, and found pleasure in combining use and beauty. The ornamental parts of dress, as clasps, buckles, rings, and diadems, also cups and other household furniture, together with the arms of military chieftains, were probably adorned with the first species of engraving.

Terah, the father of Abraham, is supposed to have been the first man after the Flood who fabricated carved images; and the carving of that remote era often bore a great resemblance to engraving. Moses when speaking of the art of engraving does not mention it as a new invention, but seems to consider to it as too well understood among the Israelites to need any previous description. For though Bezaleel and Aholiab are the first names mentioned professedly as engravers, and of whom it is said that God filled them with wisdom of heart to work all manner of work of the engraver, &c., yet this does not apply the invention of the art to either of them: indeed, previous to the commencement of the workmanship for the tabernacle, it is said of Aaron, that he fashioned the calf he had made with the graving-tool. It is probable that this and many other arts, such as casting of metals, forming of images, carving in wood and stone, working embroidery, &c., were all learned by the Israelites in Egypt. The sacred historian frequently uses terms designed to express the works of the engraver, but it may be doubted how far they resemble the productions of the present time, since they were equally applicable to carving and chasing.

The first specimens of engraving were probably nothing more than rude portraitures expressed by simple outlines. The most ancient remains of the art of engraving on metals are the hieroglyphical figures of the Egyptians, many of which were immured as a sort of talisman in the coffins of the mummies. The Phœnicians are thought to have learned the art from the Egyptians: their coins, which are very ancient, prove them to have been tolerable artists. From Phœnicia the art reached Greece, where in Homer's time it was carried to a considerable degree of perfection. Herodotus states that one of the earliest uses to which engraving was applied by the Greeks was the delineation of maps on metal plates. He says that "Aristagoras appeared before the king of Sparta with a tablet of brass in his hand, on which was inscribed every part of the habitable world, the seas and the rivers; and to this he pointed as he spoke of the several countries between the Ionian sea and Susa." The date of this event was the year 500 B.C.

But some of the remains of Etruscan art are thought most ancient of all. In the collection of Sir William Hamilton (now in the British Museum) are many examples of engraving, of which we select one. It it supposed to be the sheath of a parazonium or dagger. It is more than three inches and three quarters wide at the top, and decreases gradually to an inch and a quarter at the bottom.

Its present length is eight inches and a half. The story engraved upon it appears to be taken from Homer. The trophy at the bottom is symbolical of war. Above the trophy two warriors are delineated with a woman who seems to accompany them with great reluctance. Mr. Strutt conceives this may represent Paris with his accomplice conducting Helen to the ship in order to make their escape to Troy; and at the top the messenger, a servant of Menelaus, is relating to his lord the ungrateful behaviour of his Trojan guest. The figures are exceedingly rude, and seem to indicate the very infancy of the art of engraving; they are executed with the graver only, upon a flat surface, and need only to be filled with ink, and run through a printing press (provided the plate could endure the operation) to produce a fair and perfect impression. "The print so produced," says M. D'Ankerville, "would certainly be the most ancient of all that are preserved in the collections of the curious; and demonstrate to us how near the ancients approached to the discovery of this admirable art, which in the present day forms so considerable a branch of commerce. We may indeed say that they did discover it; for it is evident from the valuable relic of antiquity before us, that they only wanted the idea of multiplying representations of the same engraving. After having conquered every principal difficulty, a stop was put to their progress by an obstacle which, in appearance, a child might have surmounted. But in the course of the arts, it is much easier for the workman to conceive what he can do himself than foresee to what length the labours which he executes shall be carried in futurity, or to what unknown uses they may be properly applied. For it happens very rarely indeed that the first inventors of an art have conceived all the subsequent consequences which may be derived from it. It is those rather who follow, and know how to profit from the exertions of others, who generally pass for the inventors." The idea given in this quotation has been acted on: prints have been taken with ink from Etruscan specula in the British Museum,

sufficiently proving the capability of these early engravings to deliver impressions.

The high antiquity of numismatic engraving, or the art of sinking dies from which coins are struck, may be seen by reference to our Supplements on Coins, *Saturday Magazine*, Vol. XVIII., p. 81 and 161. In our articles on Gems and Precious Stones, *Saturday Magazine*, Vol. XVII., we have also noticed the antiquity of seal or gem-engraving. The art of taking impressions from engraved works, by means of ink, or colours, is a discovery of comparatively modern date. The ancients were certainly no strangers to the art of impression in one sense of the term, as is proved by their stamps and signets, their lamps and vases, and their *bassi-rilievi* of clay, which being first cast or pressed into form by means of moulds, were afterwards finished by the tools of the modeller, and often in parts marked with letters or ornaments, by the simple operation of stamping. They seem also to have known the use of stamps of separate letters: but the simple operation of pressing one body against another of softer texture, and thereby occasioning a change of form in its surface, is very distinct from the effect produced in the impression taken from wood or copper engraving, where there is no change of form in the surface of the paper, but a change of colour. The ancients were accustomed to use stamps to impress wax, clay, and other soft bodies; but the simple process of covering them with ink, or with a tinted liquid, for the purpose of stamping paper, parchment, cloth, &c. does not appear to have occurred to them.

Section 2. Division of the Subject.

In accordance with the practice so generally adopted in the arts and sciences, of recurring to the Greek language for technical terms, the art of engraving derives from that source the names of three of its great divisions:—1. Chalcography, or engraving properly so called, is derived from *χαλκος, copper*, and *γραφω, I inscribe*. 2. Xylography, from *ξυλον, wood*, and *γραφω, I inscribe*. 3. Lithography, from *λιθος, a stone*, and *γραφω, I inscribe*.

These different modes of engraving comprise various subdivisions, which have been thus enumerated:—

1. *Engraving properly so called.* The design is first traced with a sharp tool, called a *dry point*, upon the plate; and the strokes are cut or ploughed upon the copper with an instrument of an angular form, distinguished by the name of a *graver*.

2. *Etching.* This consists in strokes cut with a point through a thin wax-like preparation, called *etching-ground*, spread upon the copper: these strokes are corroded, or bitten into the copper, with aquafortis

3. *Etching finished with the graver.* By this method the two former methods are united.

4. *Dotting.* This method is performed by dots without strokes. The dots are executed with the point upon the etching-ground, bitten in with aquafortis, and afterwards harmonized with the graver, by means of which instrument small dots are made, or with the graver alone, as in the flesh and finer parts, unassisted with the point.

5. *Opus mallei*, or the work of the hammer. This method consists in dots first etched and afterwards harmonized with the dry point, performed by a little hammer.

6. *Mezzotinto.* In this method a dark barb or ground is raised uniformly upon the plate, by means of a toothed tool. The design being traced upon the plate, the light parts are scraped off, in proportion as the effect requires, by instruments adapted to the purpose.

7. *Aquatinta.* The outline is first etched, and then a sort of wash laid by the aquafortis upon the plate, produces the effect of drawings in Indian ink, bistre, &c.

8. *Wood engraving.* The design is carefully traced with a pen or pencil, upon a smooth surface of box-wood, and those parts which should be white are carefully hollowed out. This block is afterwards printed by the letter-press printers, in the same manner as a book is printed.

These and some other methods of engraving we propose to treat of hereafter. In proceeding to trace separately the history of each department of the art, a convenient mode of arrangement is suggested, by the materials on which the artist exercises his skill. These are wood, metal, and stone. We begin, therefore, with that which is probably the most ancient method, viz., wood engraving.

But before we enter upon the historical portion of our subject, it may be advantageous to the general reader to be yet more clearly informed of the differences between copper-plate and wood engraving. The following passage abridged from Mr. Jackson's excellent Treatise on Wood Engraving contains very clear distinctions on the subject.

Although both the copper-plate engraver and the wood engraver may be said to *cut* in a certain sense as well as the sculptor and the carver, they have to execute their work *reversed*, that is, contrary to the manner in which impressions from their plates or blocks are seen; and that in copying a painting or a drawing, it requires to be reversely transferred—a disadvantage under which the sculptor and the carver do not labour, as they copy their models or subjects *direct*. Independent of the difference of the material on which the two kinds of engraving are executed, the grand distinction between them is, that the engraver on copper corrodes by means of aquafortis, or cuts out with the burin, or dry point, the lines, stipplings, and hatchings, from which his impression is to be produced; while, on the contrary, the wood engraver effects his purpose by cutting away those parts which are to appear white or colourless, thus leaving the lines which produce the impression prominent. In printing from a copper or steel plate, which is previously warmed by being placed above a charcoal fire, the ink or colouring matter is rubbed into the lines or incisions, by means of a kind of ball formed of woollen cloth; and when the lines are thus sufficiently charged with ink, the surface of the plate is first wiped with a piece of rag, and is then further cleaned and smoothed by the fleshy part of the palm of the hand, slightly touched with whitening, being once or twice passed rather quickly and lightly over it. The plate thus prepared is covered with the paper intended to receive the engraving, and is subjected to the action of the rolling or copper-plate printer's press; and the impression is obtained by the paper being pressed *into* the inked incisions. As the lines of an engraved block of wood are prominent or in relief, while those of a copper-plate are sunk or hollowed, the mode of taking an impression from the former is, so far as relates to the process of inking, precisely the reverse of that which has just been described. The usual mode of taking impressions from an engraved block of wood is by means of the printing-press, either from the block separately, or wedged up in a *chace* with types. The block is inked with the pressman's balls or roller, in the same manner as type, and the paper being turned over upon it, the paper is pressed *on to* the raised lines of the block, and thus the impression is produced. Impressions from wood are thus obtained by the *on*-pression of the paper against the raised or prominent lines; while impressions from copper plates are obtained by the *in*-pression of the paper into hollowed ones. In consequence of this difference in the process, the ink lines impressed on paper from a copper-plate appear prominent when viewed direct; while the lines communicated from an engraved wood block are indented in the front of the impression and appear raised at the back.

The best kind of wood for the practice of this art is box. A clear yellow colour, uniform over the whole surface, is in general the best criterion of the good quality of this wood. Hardness and toughness, without friability or tendency to crumble under the tool, which often proceeds from over-dryness, are indispensable qualities. Beech, pear, apple and other woods were once used, and are still resorted to for large and coarse work. The engraver now works on the cross section of the wood: but it was once the practice to engrave upon the side or *long-way* of the wood.

Section 3. Origin of Wood Engraving.

To China, the reputed birth-place of so many valuable inventions and discoveries, we are also referred for the invention of wood engraving: and the invention is said to have originated in the peculiar structure of their language; in writing which they do not describe words by means of a combination of letters, but each word is indicated by a distinct character. The number of these characters is so vast that it would scarcely be possible for them to print their books with moveable types. The method adopted by them, according to Du Halde, is as follows. The work intended to be printed is transcribed by a careful writer upon thin transparent paper. The engraver glues each of these written sheets with its face downwards upon a smooth tablet of pear or apple tree, or some other hard wood; and then with gravers and other instruments he cuts the wood away in all those parts upon which he finds nothing traced; thus leaving the transcribed characters ready for printing. In this manner he prepares as many blocks as there are

written pages. He then prints the number of copies immediately wanted. The block to be printed must be placed level and firmly fixed: the printer does not use a press on account of the delicate nature of the paper, but applies his ink to the blocks by means of brushes, taking care not to wet the surface too much, or to leave it too dry, for in the one case the characters would be slurred, and in the other would not print at all: when the block is in a proper state he can print three or four sheets following without dipping his brush into the ink. The impression is made by rubbing the paper while on the block with a small degree of pressure; the paper not being sized, it receives the ink the instant it comes in contact with it. In this way, with great neatness but on one side of the paper only, the Chinese print their books; and this method appears to be of very high antiquity. Mr. Hansard in his *Typographia* gives a most ingenious fac simile of Chinese printing; it is executed after an original block, from which probably a mould was taken for casting it in type metal. The original, which is five-sixths of an inch in thickness, being engraved on both sides, Mr. Hansard prefers to call a wooden leaf. He mentions having seen in the library at the India House several specimens in various stages of the process: some having the paper with the characters traced ready glued to the board; some engraved but never printed from; others showing signs, like the original he has had copied, of much wear; and one very large block of a picture in outline. But all these are only engraved on one side, and have a dove-tail at each end to slide into larger blocks by which they are held firm for the workman's use. Several of their engraving and printing tools are also in the same library, and confirm the account given of their workmanship.

The oriental origin of wooden tablets for preserving public records is indisputable; but on the question how soon the process began of printing from blocks or wooden tablets, antiquity has hitherto been silent. Baron Meerman quotes from a history of China written by Abusaid in Persian, A.D. 1317, the following passage to show that the Chinese of that period had long been familiar with the art. "All the books edited by the persons in question (alluding to three Chinese savans whom he names) are written in a beautiful hand so that each page may be transferred in the same handsome character to the blocks, with which the men of learning are always at great pains to collate their MSS., attesting by a private mark at the back of each block their approbation of it. They next commit these blocks or tables to the best engravers, and finally complete the whole work by numbering the pages." The Persian writer next describes the care with which these tables (somewhat similar in form perhaps to our plates of stereotype) were preserved in cases under the seal of conservators incorporated as a college for the purpose, to whom all applications when a copy was required, were to be made; and on the payment to whom of a stated fee, the copy upon paper, with the seal of the proper functionary attached to it, warranting its genuineness, was granted. So methodical an arrangement certainly argues a long previous custom; but after much careful consideration and research the Baron denies the high antiquity of the art among the Chinese, but thinks that the date of A.D. 930 may be fairly assigned for Chinese impressions from wood.

Section 4. Introdction of Wood Engraving into Europe.

With respect to the time when wood engraving was introduced into Europe nothing has been decided: Marco Polo in his account of China, written after his return to Venice in the year 1295, makes no mention of wood engraving among the marvels of that country. Had the art been unknown at Venice, the Venetian traveller is not likely to have omitted the communication of an art which in China must have met him everywhere, and which to his genius and acuteness must have appeared a strikingly useful and wonderful invention. Mr. Ottley therefore argues that snch a communication would in the days of Marco Polo have been old news at Venice, and therefore could find no place among his *marvels*.

In his History of Wood Engraving Papillon gives an extraordinary narrative, which if true would prove the knowledge of wood engraving in Italy so early as year 1285, a date which is at least 130 years earlier than that of any authentic specimens of the art. Papillon's authority is now generally rejected, but we give a portion of his story on account of its curious character, and because it has been the subject of many disputes among the historians of the art. After a very laboured analysis Mr. Ottley concludes with the learned Zani that the narrative ought to be regarded as authentic: Mr. Singer grants the truth-like appearance of Papillon's tale. the writer of the article on Engraving in the *Encyclopædia Metropolitana* also considers it authentic: but Heineken, Huber, and Bartsch treat it with unqualified contempt.

"It is more than thirty years ago," says Papillon, "since I mislaid three sheets of paper, upon which I had written the descriptions of certain ancient books of wood engravings. For a long time there only remained a very confused idea of them in my mind. I remember to have searched for those papers more than twenty times in the course of writing my book, or upon the occasion of my sending such parts of it as were finished to the press. By accident, on the day of All Saints, in the year 1758, I chanced to discover those manuscript sheets, which had given me so much uneasiness, amongst a bundle of papers for hanging rooms, which my deceased father was at one time accustomed to manufacture. The circumstance gave me the greater pleasure, as, from the name of a Pope, I discovered in these writings an epoch of engraving prints and characters in wood, certainly much more ancient than any hitherto known in Europe; accompanied by a story relative to this subject, at once curious and interesting. I had so far lost the remembrance of all this, that I had not designed to make even the slightest mention of it in this history of my art. This is the proper place to speak of it: but first I must inform my readers how it came to my knowledge.

"When I was a very young man, and employed by my father almost every week-day in different places, to paste or arrange our papers for the hanging of rooms, it happened that, in 1719 or 1720, I was sent to the village of Bagneux, near Mont-Rouge, to a M. de Greder, a Swiss captain, who there possessed a very pretty house. After I had prepared a closet for him he employed me to paste certain papers, in imitation of mosaic, upon the shelves of his library. One day, after dinner, he found me reading in one of his books, and was, in consequence, induced to show me two or three very ancient volumes, which had been lent to him by a Swiss officer, one of his friends, that he might examine them at his leisure: we conversed together about the prints contained in them, and concerning the antiquity of engraving in wood. I will now give the descriptions of these ancient volumes; such as I wrote them in his presence, and as he had the goodness to dictate and explain to me.

"Upon a cartouch or frontispiece, decorated with fanciful ornaments, (which, although Gothic, are far from disagreeable,) and measuring about nine inches in width, by six in height, with, at the top of it, the arms no doubt of the family of Cunio, are rudely engraved the following words in bad Latin, or ancient Gothic Italian, with many abbreviations:—'The heroic actions, represented in figures, of the great and magnanimous Macedonian King, the bold and valiant Alexander: dedicated, presented, and humbly offered to the most holy father, Pope Honorius IV., the glory and support of the Church, and to our illustrious and generous father and mother, by us, Alessandro Alberico Cunio, Cavaliere, and Isabella Cunio, twin brother and sister: first reduced, imagined, and attempted to be executed in relief, with a small knife, on blocks of wood, made even and polished by this learned and dear sister; continued and finished by us together at Ravenna, from the eight pictures of our invention, painted six times larger than here represented: engraved, explained by verses, and thus marked upon the paper to perpetuate the number of them, and to enable us to present them to our relations and friends, in testimony of gratitude, friendship, and affection. All this was done and finished by us when only sixteen years of age.'

"This cartouch," continues Papillon, "is inclosed in a square, formed by a simple black line, one-twelfth of an inch in thickness; a few light hatchings, irregularly placed and executed without precision, indicate the shadows of the ornaments. The whole, like the prints which follow, was taken off, according to all appearances, with a pale tint of indigo in distemper, by passing the hand several times over the paper, after it had been laid on the block; in the simple manner used by the manufacturers of cards in printing their addresses, and the wrappers in which they inclóse their packs of cards. The ground or field of the print not having been sufficiently hollowed out in the block in some places, has occasioned the paper, which is of a brownish colour, to be smeared in those parts; in consequence of which the following memorandum was written on the margin beneath,

THE ALPHYN, OR BISHOP.
From Caxton's Game at Chesse.

GROUP OF BEGGARS.
From an early Block Book.

that the fault might be rectified. It is in Gothic Italian, which M. de Greder had great difficulty to decipher, and was, no doubt, written upon this proof, probably the first taken from the block, by the hand of the Chevalier Cunio, or that of his sister:

"'*The ground of the wooden block must be hollowed deeper, that the paper may not touch it any more in receiving the impression.*'

"Immediately following this frontispiece are the eight pictures engraved in wood, of the same dimensions and surrounded by a similar fillet: they have also a few light hatchings to indicate the shadows. At the bottom of each of these prints, between the broad line or fillet which bounds the subject, and another parallel line, distant from it about the breadth of a finger, are four Latin verses engraved upon the block, which poetically explain the subject, and above each is its title. The impressions of all of them resemble that of the frontispiece; being of a grey tint and spotty; as if the paper had not been damped or wetted, before it was laid upon the engraved blocks. The figures, which are passable in respect to their outlines, although of a semi-Gothic taste, are sufficiently well characterized and draped; one may perceive by them, that, in Italy, the arts of design were then beginning by degrees to experience melioration. The names of the principal personages represented are engraved under their figures; as Alexander, Philip, Campaspe, and others.

"First subject. Alexander mounted on Bucephalus whom he has tamed. Upon a stone are these words, *Isabel Cunio pinx. et Scalp.*

"Second subject. The passage of the Granicus. Near the trunk of a tree are engraved these words, *Alex. Alb. Cunio Equ. pinx. Isabel Cunio Scalp.*"

In this way, with more or less minuteness, Papillon describes the eight subjects. Upon the blank leaf which follows the last print occur the following words, badly written in old Swiss characters, with ink so pale that they are scarcely legible.

"This precious book was given to my grandfather Jan. Jacq. Turine, a native of Berne, by the illustrious Count de Cunio, magistrate of Imola, who honoured him with his liberal friendship. Of all the books I possess, I esteem it the most, on account of the quarter from whence it came into our family; the science, the valour, the beauty of the amiable twins Cunio, and their noble and generous intention of thus gratifying their relatives and friends. Behold their singular and curious history, in the manner in which it was several times related to me by my venerable father, and according to which I have caused it to be written more legibly than I myself could have done it.

"'The young and amiable Cunio, twin-brother and sister, were the first children of the son of the Count di Cunio, and a noble and beautiful Veronese lady, allied to the family of Pope Honorius IV., when he was only a Cardinal. This young nobleman had espoused this young lady clandestinely, without the knowledge of the relations of either of them, who, when they discovered the affair, caused the marriage to be annulled, and the priest who had married the two lovers to be banished. The noble lady, fearing equally the anger of her father and that of the Count di Cunio, took refuge in the house of one of her aunts, where these twins were born. Nevertheless the Count di Cunio, out of regard to his son, whom he obliged to espouse another noble lady, permitted him to bring up these children in his house, which was done with every instruction and tenderness possible, as well on the part of the Count, as on that of his son's wife, who conceived such an affection for Isabella Cunio, that she loved and cherished her as if she had been her own daughter; loving equally Alessandro Alberico Cunio her brother, who, like his sister, was full of talent, and of a most amiable disposition. Both of them made rapid advances in various sciences, profiting by the instruction of their masters; but especially Isabella, who, at thirteen years of age, was already considered as a prodigy; for she perfectly understood and wrote Latin, composed verses, had acquired a knowledge of geometry, was skilful in music, and played upon several instruments; moreover she was practised in drawing, and painted with taste and delicacy. Her brother urged on by emulation, endeavoured to equal her; often, however, acknowledging that he felt that he could never attain so high a degree of perfection: he himself was, nevertheless, one of the finest young men of Italy; he equalled his sister in beauty of person, and possessed great courage, elevation of soul, and an uncommon degree of facility in acquiring and perfecting himself in whatever he applied to. Both of them constituted the delight of their parents, and they loved each other so perfectly, that the pleasure or chagrin of the one or the other was divided between them. At fourteen years of age this young gentleman could manage a horse, was practised in the use of arms, and in all exercises proper for a young man of quality; he also understood Latin, and had considerable skill in painting.

"'His father having, in consequence of the troubles of Italy taken up arms, was induced, by his repeated solicitations, to take him with him the same year, viz, at the age of fourteen, that under his eyes he might make his first campaign. He was intrusted with the command of a squadron of twenty-five horse, with which, for his first essay, he attacked, routed, and put to flight, after a vigorous resistance, almost two hundred of the enemy: but his courage having carried him too far, he unexpectedly found himself surrounded by many of the fugitives; from whom, nevertheless, with a valour not to be equalled he succeeded in dis-

engaging himself, without sustaining any other injury than that of a wound in his left arm. His father, who had flown to his succour, found him returning with one of the standards of the enemy, with which he had bound up his wound: he embraced him full of delight at his glorious achievements, and, at the same time, as his wound was not considerable, and as he was desirous to reward such great bravery upon the spot, he solemnly made him a knight, dubbing him in the same place where he had given such great proofs of his extraordinary valour. The young man was so transported with joy at this honour, that, wounded as he was, he instantly demanded the permission to go and see his mother, that he might inform her of the glory and honour which he had just acquired; permission was granted by the count, the more readily as he was glad to have this opportunity of testifying to that noble and afflicted lady (who had always remained with her aunt a few miles from Ravenna), the love and esteem which he ever continued to entertain for her.

"'The young knight therefore immediately set out escorted by the remains of his troop, and with this equipage he arrived at the residence of his mother, with whom he staid two days; after which he repaired to Ravenna to show a similar mark of respect to the wife of his father, who was so charmed by his noble actions, as well as by his attentions towards her, that she herself led him by the hand to the apartment of the amiable Isabella. He remained a few days in this city; but impatient to return to his father, that he might have an opportunity of distinguishing himself in new exploits, he set off before his wound was yet healed. But the count would not suffer him to serve until his arm was perfectly healed. It was soon after this that Isabella and he began to compose and execute the pictures of the actions of Alexander. He made a second campaign with his father, after which he again worked upon these pictures, conjointly with Isabella, who applied herself to reduce them and to engrave them on blocks of wood. After they had finished and printed these pieces, and presented them to Pope Honorius and to their other relations and friends, the cavalier joined the army for the fourth time, but this last campaign was fatal to him: he fell covered with wounds, by the side of a friend who accompanied him, and who, whilst endeavouring to defend him, was also dangerously wounded. Isabella was so much affected by the death of her brother, which happened when he was not yet nineteen, that she languished and died when she had scarce completed her twentieth year. The mother also died of grief for the death of her beloved children. The Count di Cunio, who had been deeply afflicted by the death of his son, could scarcely support that of his daughter. Even the Countess di Cunio, who loved Isabella with great tenderness, fell ill of grief for her loss, and would have sunk under it, had she not been supported by the manly fortitude of the count. Happily the health of the countess was by degrees re-established. Some years afterwards, the generous Count di Cunio gave this copy of the actions of Alexander bound* as it was, to my grandfather; and I have caused the leaves of paper to be inserted, upon which, by my orders, this history was written.'"

In resuming his observations Papillon remarks, "that from the name of Pope Honorius IV. engraved on the frontispiece of these ancient prints of the actions of Alexander, it is most certain that this precious monument of engraving on wood, and of the art of taking impressions, was executed between the years 1284 and 1285†; because that pope, to whom it was dedicated, governed the church only for the space of two years; that is, from the second of April, 1285, to the third day of the same month in the year 1287: the epoch, therefore, of this ancient specimen of engraving is anterior to all the books, printed in Europe, that have been hitherto known. M. Spirchtvel, the officer, who was the possessor of this copy, and the friend of M. de Greder, was one of the descendants of Jan. Jacq. Turine, who was the ancestor of his mother. The death of M. de Greder having taken place many years ago, I am unable to learn where this book is at present to be seen, so that its authenticity may be established to the satisfaction of the public, and that which I have written be confirmed. It is, however, very probable that the copy which was given to Pope Honorius may be preserved in the library of the Vatican at Rome."

It is unfortunate for the truth of this story that no copy of the book has been discovered. Mr. Chatto (who contributed the historical portion to Mr. Jackson's work) endeavours on internal evidence to disprove the truth of this romantic narrative. He says, "It is remarkable that this singular volume should afford not only specimens of wood engraving earlier by 130 years than any which are hitherto known, but that the binding of the same period as the engravings should also be such as is rarely if ever to be met with till upwards of 150 years after the wonderful twins were dead."

One of the most authentic documents in which positive mention is made of wood engraving is a decree of the government of Venice, found among the archives of the old company of Venetian painters, bearing date October the 11th, 1441, prohibiting the importation into that city of works, "printed or painted on cloth, or on paper, that is to say, altar-pieces, or images and playing cards, and whatever other work of the said art done with a brush and printed." The reason for this decree was for the protection of native artists, "who are a great many in family," in order that they "may find encouragement, rather than foreigners." This decree is cited as good evidence that wood engraving was practised at Venice as early as the commencement of the fifteenth century, for it must have been known and practised many years before 1441, when, according to that document, "the art and mystery of making cards and printed figures" had fallen to total decay. Mr. Ottley thinks that the art had from a very early period been practised by the Venetians, "who may easily be supposed to have learned it in the course of their commerce with the Chinese, and that through their means it became at length promulgated in various parts of Europe:" that prior to 1400, the Venetian engravers continued to be more numerous, and perhaps more skilful than those of other countries, until some time after that period; but that at length wood engraving became improved by the artists of other parts, and that these, after the use of playing cards was become general, so increased in number and dexterity, as to be able to furnish their cards and printed figures at a lower price, and of a better quality, than the Venetian artists themselves could do: hence the interference of the Venetian government.

The silence of old writers on this art renders it probable that for a very long time the nature of the art remained a secret, known to few except those who practised it, and that it was commonly confounded with painting or drawing. The representations of saints, and other devotional subjects, which the first wood engravers produced, were rudely engraved and printed in outline, and then daubed over with a few gay colours, in the manner practised so long afterwards in Germany and the Low Countries, so as to catch the eye of the vulgar, who no doubt considered them as pictures. Being manufactured at small cost they were sold at a cheap rate, and perhaps sometimes distributed gratis to the common people, who hung them up in their dwellings. Hence (as Mr. Ottley ingeniously argues) they were little esteemed by the richer classes, who considered them as paintings of an inferior kind, and themselves employed artists of eminence, to execute more finished pictures of such devotional subjects as they required, on vellum or on board. It is therefore not extraordinary that the ancient use of wood engraving should have escaped the notice of contemporaneous historians, since many of them were perhaps unconscious even of the existence of such an art; and those who were acquainted with it considered it as an art of small importance.

The inhabitants of Germany and the Low Countries seem to have adopted this art with eagerness: their productions probably began to constitute a branch of their commerce soon after 1400, for "they used to send their playing cards in large bales, as well into Italy, as to Sicily, and other parts, by sea, receiving in return spices and other merchandize." The term *Kartenmacher*, or cardmaker, is mentioned in the *Burger-buche* of Augsburg, in 1418, and in that of Nurenburg, in 1433 and 1438. The artists who engraved in wood were called *Formschneider*, or figure-cutter, an appellation by which they are still known. Another set of artists were called *Briefmaler*, or painters of cards, and according to Heineken (who supports the theory that wood engraving owes its origin to cards,) the process adopted by them was much the same as the modern stencilling: thin plates of metal were cut into holes or patterns,

* Papillon in a note to this passage, says, "The ancient and Gothic binding is made of thin tablets of wood, covered with leather, and ornamented with flowered compartments, which appear simply stamped and marked with an iron a little warmed, without any gilding. It has not escaped the attack of the worms; the cover has been eaten by them into holes in many places."

† Mr. Ottley remarks that Papillon should have said 1285, or 1286. It is possible indeed that the work was begun in 1284.

which served as a guide in finishing the cards with colours. The persons who manufactured cards sold also the prints of saints, the demand for which was excessive during the fourteenth and at the commencement of the fifteenth century.

The common people of Suabia and the adjoining districts were accustomed to call the prints of sacred subjects disseminated among them by the name of *Helgen* or *Helglein*, *i. e.*, saints, or little saints, a term derived from the German word Heiligen, or Saints, and in course of time the term came to be applied to prints generally. In France also these cuts of sacred subjects were called *dominos*.

The earliest print bearing a date was discovered by Heineken, in the Chartreuse at Buxheim, in Suabia, one of the most ancient convents in Germany: the subject is Saint Christopher carying the infant Jesus across the sea; opposite to him is the hermit holding up his lantern to give him light; and behind is a peasant, seen in a back view, carrying a sack, and climbing the ascent of a steep mountain. This piece is of a folio size, and coloured in the manner of our playing cards; at the bottom is a Latin inscription*, with the date 1423. This print was found pasted in the inside of one of the covers of a manuscript in the Latin language, of the year 1417, and is now in the splendid library of Earl Spencer, where it is preserved in the same state in which Heineken discovered it. A fac-simile of this cut is given in our frontispiece. Within the other cover of the same manuscript another wood print is pasted, representing "the Annunciation of the Virgin." Mr. Ottley considers that it is the production of the same artist; that both prints were probably printed originally on the same paper, for the purpose of being folded and inserted in a book of devotion, when, in common with many other small portable altar-pieces of those times, the two subjects would have faced each other. They are of the same height, and very nearly of an equal breadth; are printed upon tolerably thick paper, with black oil colour, and are tinted, apparently at the time, with precisely the same colours.

Though these prints were found in Germany, they bear so striking a resemblance to the style of the old Italian Schools, that it has been suggested that they may be the productions of Venice, or of some district of the territory then under the dominion of that republic. "Those who are acquainted with the style of art which, founded by Giotto, and promulgated by his school, prevailed more or less throughout Italy, from the beginning of the fourteenth until towards the middle of the fifteenth century, will, I think, discover this similitude in the general arrangement of the composition—the simplicity and lightness of the architecture, with unornamented circular arches, supported by a single slender pillar and pilasters—the peaceful attitude of the Virgin, and especially her drapery, which, wholly unlike the angular sharpness, the stiffness and the flutter of the ancient German School, is divided into a few easy folds by lines of gentle carvature."

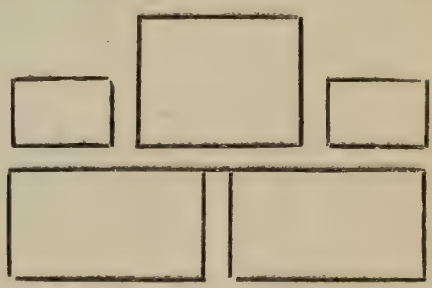
The next print in point of antiquity is a wood engraving of a quarto size, found in the Abbey of St. Blasius, in the Black Forest. It represents the martyrdom of St. Sebastian, and is dated 1437; under it is a prayer (doubtless printed from the same block) and a repetition of the date.

The old German wood engravers appear to have manufactured prodigious quantities of these religious cuts, which were dispersed and lost among the laity, but preserved in part by the monks, who pasted them into the first printed books, with which they ornamented their libraries. By extending the principle of impression, it was not difficult for the artists to engrave historical subjects, and entire sets of prints, and to accompany them with explanations of their meaning, engraved in the same manner on wood; whether for the instruction of youth, or for the purposes of devotion. And thus originated our first books printed from engraved wooden blocks, a practice to which it is difficult to assign a date. Mr. Ottley surmises that the commencement of that practice cannot be later than 1420, and that it was probably in some parts used earlier. Many writers suppose that this invention of block printing gave rise to the idea of printing with moveable characters, and to the consequent discovery of typography.

From the time that wood engraving became connected with the manufacture of books, may be dated its more general diffusion and improvement; the productions of the wood engraver collected in the form of volumes became less exposed to loss or injury, and many of them are preserved to our own time.

Antiquarian writers are not agreed as to which is the most ancient of these block books. One of the earliest is certainly the "Biblia Pauperum," or the Bible of the Poor. This work consists of 40 leaves, of a small folio size, printed by means of friction from the same number of engraved blocks of wood, on one side of the paper only; in which respect, as well as in the brown tint, apparently unmixed with oil, with which the prints are taken off, it resembles most of the other early block-books. These printed pages are placed two by two, facing each other; the second print being opposite to the first, the fourth to the third, and so on; by these means the blank sides of each two leaves are likewise opposed to each other, and being pasted together give to the whole the appearance of a book printed in the ordinary way on both sides the paper.

The prints differ a little in size, being from 9¼ inches to 10¼ in height by about 7½ broad. Each print contains three sacred historical subjects disposed in compartments side by side, and four half-length figures of prophets, and other holy men, in niches, two of them above and two beneath the central subject; as shown in the following diagram.



The inscriptions, which are written in Latin in rhymed couplets, commence at the top of each print, in the vacancies on either side the two half figures in niche by the texts of the Bible from which the subjects are taken. The prophets and saints have underneath them their names, and additional inscriptions relative to the stories represented are introduced on labels and in other spaces below. The central compartments represent the history of the New Testament; those on either side, stories from the Old Testament, typical of, or alluding to, the central subjects. Each print, to guide the bookbinder in placing it, is marked with a letter of the alphabet immediately over the central subject. The first twenty prints are marked from A to V; after which a second alphabet commences, for the last twenty prints, the letters of which are distinguished from those of the former, by being placed between two points, thus 'A'

The Biblia Pauperum is one of the block books most frequently referred to, as a specimen of that kind of printing from wood blocks which preceded typography. This work, the text of which is in abbreviated Latin, is frequently called "The Poor Man's Bible" and is supposed to have been "printed for the use of the poor in an age when even the *rich* could scarcely read their own language." But by comparing it with various other works for the use of preachers, Mr. Chatto supposes its right title to be "Biblia Pauperum Predicatorum" or the Poor Preacher's Bible, being in fact a collection of wood cuts to warm the preacher's imagination, and texts to assist his memory.

Among the earliest results of block-printing may be reckoned several editions of the grammatical primer, called Donatus, from a celebrated grammarian of that name, who lived in the middle of the fourth century.

The reader may form some idea of the mode of illustrating block books by the fac-simile given at page 213. The group, which is characteristic, is copied from one of the earliest block books, entitled *Sancti Johannis Apocalypsis*. A very fine and complete copy of this rare work is in Earl Spencer's library: it is bound in ancient red morocco.

* The two verses at the foot of the cut,

Cristofori faciem die quacunque tueris,
Illa nempe die morte mala non morieris,

May be translated as follows:—

Each day that thou the likeness of St. Christopher shall see,
That day no frightful form of death shall make an end of thee.

They allude to a popular superstition, common at that period in all Catholic countries, which induced people to believe that the day on which they should see a figure or image of St. Christopher they should not meet with a violent death, nor die without confession.—Jackson's *Treatise on Wood Engraving*.

Section 5. Origin of Typography.

The early history of wood engraving is so closely interwoven with that of printing, that the progress of the one necessarily leads to a notice of the origin of the other. This subject, however, has been so much controverted and discussed by antiquarian writers that we cannot enter into it. It will be sufficient for our purpose to state briefly the pretensions of the four persons whose names occur most frequently in these controversies; viz., Lawrence Coster, (or Janszoon,) of Haarlem; John Gutenburg, (paternally Gensfleisch,) of Strasburg; John Fust, (or Faust,) of Mayence; and Peter Schoeffer, (in Latin, Opilio,) of Gernsheim.

The *Speculum Humanæ Salvationis* is ascribed, upon the authority of Hadrian Junius, a Dutch writer of the sixteenth century, to the press of Lawrence Coster of Haarlem, who he assures us was the true inventor of typography, notwithstanding that a contrary opinion in favour of the pretensions of the printers of Mentz was generally received. The account of Junius, which is given in Latin, is in substance as follows:

He relates that about 128 years before he wrote, this Lawrence Coster resided in a large house situated opposite the royal palace at Haarlem, which was still standing. That Coster, during his afternoon walks in the vicinity of the city began by amusing himself with cutting letters out of the bark of the beech-tree: and with these, one after another, the letters being inverted, he printed small sentences for the instruction of his grand-children. That being a man of genius and research, and finding the ink then commonly used apt to spread, he afterwards discovered, with the assistance of his son-in-law, a more glutinous kind of ink, with which he succeeded in printing entire pages with cuts and characters. That he, Junius, had seen specimens of this kind printed on one side of the paper only, in a book entitled *Speculum Nostræ Salutis*, written by an anonymous writer in the Dutch language; the blank pages being pasted together that the leaves might turn over like those of an ordinary book, without showing the vacancies. That afterwards Coster made his letters of lead instead of wood; and lastly of pewter, finding that metal harder, and consequently more proper for the purpose; and that various drinking cups, made of the remains of this old type, were still preserved in the aforesaid house, where, but a few years before, Coster's great nephew, or great grandson, Gerard Thomas, had died at an advanced age. That the invention in question soon meeting with encouragement, it became necessary to augment the number of hands employed; which circumstance proved the first cause of disaster to the new establishment; for that one of the workmen, named John (whom Junius seems to suspect might have been Fust or Faust) as soon as he had made himself sufficient master of the art of casting the type, and joining the characters (notwithstanding he had given an oath of secresy), took the earliest opportunity of robbing his master of the implements of his art; choosing for the completion of his purpose, the night preceding the feast of the Nativity, when the whole family, with the rest of the inhabitants of the city, were at church, hearing midnight mass. That he escaped with his booty to Amsterdam, thence to Cologne, and lastly that he took up his residence at Mentz, where he established his printing press; from which within the following year, 1442, were issued two works printed with the characters which had been before used by Coster at Haarlem; the one entitled *Alexandri Galli Doctrinale*, the other *Petri Hispani Tractatus*.

This account Junius assures us he had from several old gentlemen who had filled the most honourable offices in the city, and who themselves had received it from others of equal respectability and credit, as a well-founded tradition; as a lighted torch passes from one hand to another without being extinguished. He states that he well remembers that Nicholas Gabius, the tutor of his youth, who was an old gentleman of very tenacious memory, used to relate that when he was a boy, he had often heard one Cornelius, then an old man upwards of eighty years of age, who had been a bookbinder, and in his youth had assisted in the printing office of Coster, describe with great earnestness the various trials and experiments made by his master in the infancy of the invention: upon which occasions he would even shed tears, especially when he came to the story of the robbery committed by one of the workmen, which he related with great vehemence; cursing those nights in which, as he said, for some months, he had slept in the same bed with so vile a miscreant; and protesting that he could with the utmost pleasure execute the thief with his own hands, if he had been still alive. Junius says that this relation corresponded with the account which Quirinus Talesius, the burgomaster, confessed to him he had heard from the mouth of the same old bookbinder.

The next claim to the honour of this invention, and which is most generally admitted, is that of John Guthenberg, of Mayence, about the year 1438. The history of the discovery, which is given in Latin by the Abbot John Trithemius, an old German chronicler, is as follows:

"At this time, in the city of Mentz, on the Rhine, in Germany, and not in Italy, as some have erroneously written, that wonderful and then unheard-of art of printing and characterizing books was invented and devised by John Gutenberger, citizen of Mentz, who, having expended most of his property in the invention of this art, on account of the difficulties which he experienced on all sides, was about to abandon it altogether; when, by the advice and through the means of John Fust, likewise a citizen of Mentz, he succeeded in bringing it to perfection. At first they formed or engraved the characters or letters in written order on blocks of wood, and in this manner they printed the vocabulary called a 'Catholicon.' But with these forms or blocks they could print nothing else, because the characters could not be transposed in these tablets, but were engraved thereon as we have said. To this invention succeeded a more subtle one, for they found out the means of cutting the forms of all the letters of the alphabet, which they called matrices, from which again they cast characters of copper or tin of sufficient hardness to resist the necessary pressure, which they had before engraved by hand. And truly, as I learned thirty years since from Peter Schoeffer de Gernsheim, citizen of Mentz, who was the son-in-law of the first inventor of this art, great difficulties were experienced after the first invention of this art of printing, for in printing the Bible, before they had completed the third quaternion or gathering of four sheets, four thousand florins were expended. This Peter Schoeffer, first servant and afterwards son-in-law to the first inventor, John Fust, as we have said, an ingenious and sagacious man, discovered the more easy method of casting the types, and thus the art was reduced to the complete state in which it now is. These three kept this method of printing secret for some time, until it was divulged by some of their workmen, without whose aid this art could not have been exercised: it was first developed at Strasburgh, and soon became known to other nations. And thus much of the admirable and subtle art of printing may suffice—the first inventors were citizens of Mentz. These three first inventors of printing, namely, John Gutenberger, John Fust, and Peter Schoeffer his son-in-law, lived at Mentz, in the house called Zum Jungen, which has ever since been called the printing-office."

One of the earliest and most celebrated results of the union of typography and wood engraving is the Psalter printed in 1457, by Fust and Schoeffer. In a colophon, (the sentence frequently added by the early printers to the conclusion of a work) the discovery of the art of printing is announced in terms of congratulation. This Psalter is printed on vellum; the psalms are in larger letters than the hymns; and the ink is uncommonly black. The capital letters are cut in wood; the largest of these, which are black, red, and blue, must have passed, it is supposed, three times through the press. This work is now very rare, not more than six or seven copies being known to exist.

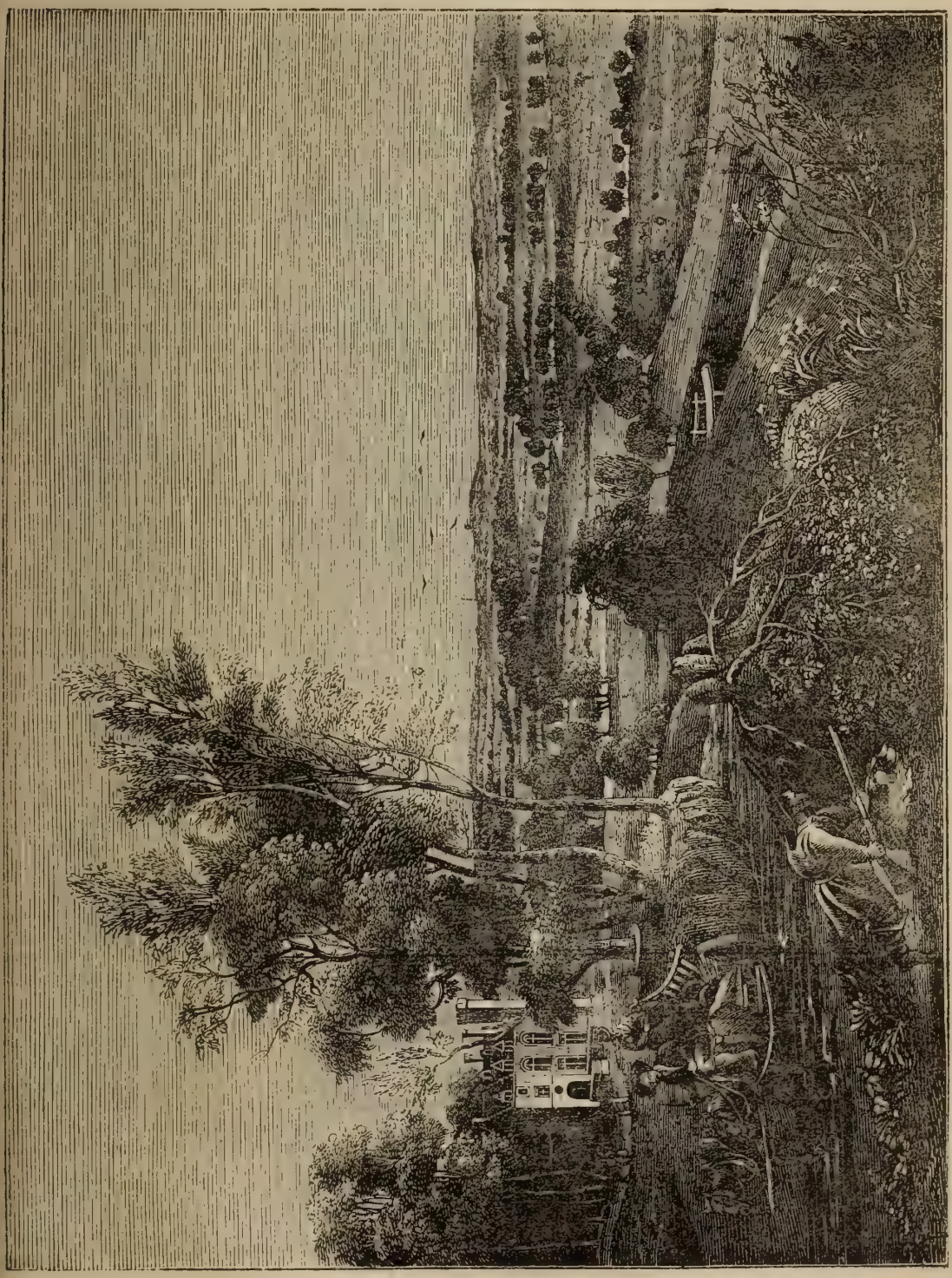
Mr. Ottley remarks, that after the establishment of typography the wood engravers of Italy, and especially those of Venice, began to exert themselves with diligence; in order that their cuts, no longer exclusively destined to be distributed to the common people in commemmoration of the miracles of their patron saints, might possess that beauty of execution necessary to render them truly ornamental to the printed volumes they were employed to illustrate or adorn. The progressive improvement of wood engraving, due most probably to its connection with typography, remains to be considered.

LONDON:
JOHN WILLIAM PARKER, WEST STRAND.
Published in Weekly Numbers, price One Penny, and in Monthly Parts, price Sixpence.
Sold by all Booksellers and Newsvenders in the Kingdom.

THE

Saturday Magazine.

No. 637. JUNE 4TH, 1842. { PRICE ONE PENNY.



SCENE IN BRABANT.

FROM THE PICTURE BY RUBENS IN THE NATIONAL GALLERY.

RUBENS AND HIS WORKS.

III.

In the year 1631 Rubens formed a second matrimonial alliance: his bride was Helena Forman, a young lady belonging to one of the richest and most respectable families in Antwerp. Her beauty, modesty, and amiable qualities have been celebrated by every writer of that day. She frequently served her husband as a model, and her portrait is found in many of his historical pictures. The same year he accepted the office of director of the School of Art in Antwerp, and in compliance with an ancient custom, presented the Academy with a chair covered in morocco leather, on the back of which was inscribed "Petrus Paulus Rubens, 1631," and which is still carefully preserved in the academy. He also gave an inauguration picture, the subject of which was the Virgin, with the infant Jesus and Joseph.

The reputation of Rubens as a painter was now becoming more and more widely diffused, so that the princes and nobles of Europe were anxious to obtain some of his works, and as the orders he received were far too numerous to admit of his executing them with his own hands, he was usually satisfied with furnishing the sketches, leaving the greater part of the working to his pupils, and then putting the finishing touches to the whole. "We must admit that pictures, in which the figures were painted by such artists as Van Dyck, Soutman, Van Heck, Diepenbeck, and Van Thulden; the landscapes by Wildens or Van Uden; the animals and other accessaries by Snyders, may be regarded as successful, and for the most part excellent performances: but it was impossible that they could display such consistency, and individuality in conception and execution, as those which emanated from the pencil of Rubens alone."

It is to the co-operation of such pupils that Rubens was able to finish his large altar-pieces in such very short periods of time. He painted the celebrated altar-piece for the church of St. Roch, in Alost, in eight days, representing that saint healing the sick of the plague. On such occasions it was frequently arranged that for every day employed upon a picture, he should receive one hundred florins, equal to about ten pounds sterling.

His domestic tranquillity and occupations as an artist were interrupted in the year 1633, by another diplomatic mission, in consequence of hostilities between Flanders and Holland. After receiving his instructions from the minister, the Marquis Aytona, he went to Holland to endeavour to arrange a truce, in order, as it is said, to gain time to receive succours from Spain. With his customary precaution to conceal the object of his mission, Rubens arrived at the Hague, by a circuitous route, in the disguise of an ordinary traveller. He soon contrived to open a negotiation with the leaders of the council, and had made considerable advances in the object of his mission, when the sudden death of Prince Maurice of Orange terminated the treaty. Soon afterwards, when fears were excited at the court of Brussels by the military successes of the Dutch, Rubens was again sent to Holland, and he succeeded in inducing the States General to enter into a regular treaty of peace with the plenipotentiaries of Spain. Scarcely had he returned to his family, and resumed his occupations, when he received the painful intelligence of the death of the Infanta Clara Eugenia Isabella, his oldest and most esteemed patroness.

About the year 1635 Rubens became subject to frequent fits of gout, which, attacking his hands, disabled him from painting large pictures; he employed himself therefore chiefly on easel pictures, and landscapes were generally the subjects of his choice: many of these he finished at his country residence, Stein, near Mechlin. He also withdrew from business, and ceased to correspond with persons at a distance; yet the interest which he took in art and science still survived in all its former enthusiasm, as appears by his letters of this period, and by the intercourse which he still kept up with artists and men of learning.

But although under the influence of ill health and declining years, new employments and new honours awaited him. The Cardinal Infant Don Ferdinand, brother to Philip IV. of Spain, had succeeded Isabella as Regent of the Netherlands, and was to enter the city of Antwerp in state, in the month of May, 1635. The authorities, wishing to give due splendour and interest to the ceremony, applied to Rubens to make the necessary plans, and compose the decorations for eleven triumphal arches, setting forth, in a series of allegorical pictures, the virtues and heroic actions of the new governor. The numerous sketches and studies made by the artist for this work, and the completion of the immense pictures under his direction, and in many instances finished with his own hand, "exhibit," as Mrs. Jameson remarks, "all the fire and spirit of an unimpaired fancy." On the day of the public entry, the artist was prevented by a fit of the gout from explaining his pictures to the regent, but he was indemnified for the disappointment by a visit from the prince, who remained with him a considerable time, engaged in conversation with the artist, and examining the rich collection of works of art with which Rubens had adorned his mansion.

In the year 1640 Rubens, then in the sixty-third year of his age, fell a victim to the frequent attacks of gout which had embittered his latter years. His funeral was conducted with much solemnity. The procession included the clergy of the collegiate church of St. Jaques, and several orders of the poor, to whose comfort he was a liberal contributor. On each side of the bier were sixty orphan boys, bearing torches; then followed the chief officers of the city, many noblemen, merchants, and citizens of Antwerp, and the members of the Academy of Painting. The body was placed in the family chapel in the church of St. Jaques, the altar of which was adorned by one of his most admirable works, representing the Virgin and the infant Jesus, with the adoration of St. Bonaventura. This picture contains, besides, the portraits of three females, (two of them being his own wives) and that of the artist himself, who is represented as St. George; in the foreground are St. Jerome and the lion. "This picture," says Waagen, "is singularly attractive, from the energy and life in the figures, and the splendour of the colouring."

The family having expressed a wish to that effect, the artist's friend Gevaerts wrote a Latin epitaph, in which the merits of Rubens as a man of learning, a painter, and a statesman are commemorated; but it is stated that the plain slab on which this inscription is engraved was not really put up till a century after the death of Rubens. It is difficult to explain this mark of disrespect, for the chapel and monument were erected to his memory by his widow and children.

The catalogue of the works of art in the possession of Rubens at the time of his death contained three hundred and nineteen pictures alone, although the artist's widow had previously made a selection of such as pleased her most, or those which she thought likely to injure the artist's reputation. It was at first intended to sell the whole collection by auction; but this was abandoned, and the pictures, having been valued by eminent artists, were sold separately by private contract. The principal purchasers were the King of Spain, the Emperor, the King of Poland, the Elector of Bavaria, and Cardinal Richelieu, the latter of whom obtained a great part of the most valuable works. The valuable collection of gems and cameos, medals and carvings, were bought altogether by the King of Spain.

The person of Rubens will be familiar to most of our readers from the many excellent engravings from such of the artist's pictures as pourtray his outward form.

We call to mind the features of this artist as naturally as those of a familiar friend. Who does not remember that oval face, those finely-formed and regular features, the dark hazel eyes, and the curling auburn hair? Those who have seen the family-piece at Blenheim will not fail to agree with the remark of Waagen:

That even in his later days Rubens could relinquish that fervid redundance of style for which he had become remarkable, and lend to his conceptions all the softer graces of the affections, to his execution the most finished care, to his colouring all the modesty of nature, is proved by a picture at Blenheim, representing himself and his second wife, Helena Forman, strolling in a flower garden: she is conducting a child in leading-strings. This representation of the innocent domestic happiness enjoyed by a person of noble character, mature age, and distinguished station, strikes the beholder so vividly, that it is sure to produce the most agreeable and soothing impressions on the mind, and I have no hesitation in pronouncing it one of the most successful family-pieces in the world.

We have already referred to the graceful and attractive manners of Rubens;—his conversation has been characterized as facile and engaging; and when animated in discourse his eloquence, delivered with a full and clear intonation of voice, was always powerful and persuasive. He would converse freely with his visitors and at the same time pursue the operations of the pencil, or attend to the reading of some classical author, a practice of which he was very fond. His habits were to rise early, attend the service of the church, and afterwards engage in sketching or drawing; after breakfast he entered his painting-room, examined the progress of his scholars, corrected their works, and directed their further proceedings. His lessons, conveyed with clearness, were illustrated by such excellent examples that his pupils soon became capable of forwarding all his large works. In the evening he frequently rode on horseback, or walked on the ramparts of the city. He seldom visited, but was always happy to receive those who came to his house. The supper time was generally cheered by the society of some friends, chiefly of learned men or eminent painters; among the former were Nicholas Rockox, the burgomaster of the city, and Gaspard Gevartius.

But nothing inspires such a favourable idea of the disposition and general structure of the mind of Rubens as his conduct towards other artists—conduct the more worthy of admiration as he himself, owing to his great talents, wealth, and distinguished connexions, occupied a station in society at once honourable and important. His doors were open at all hours, even when he was at work, to every artist desirous of profiting by his aid or advice; and he was ever ready to inspect the works of any artist who wished it. On such occasions he always gave his opinion with candour according to the principles of the art; nay, he would even take up the brush himself, and touch such parts as required it. In almost every picture he was sure to discover something good, and it seemed to afford him real pleasure to acknowledge the merits of a brother artist, and to set them forth on every opportunity. Upon being told that Van Dyck, after his return from Italy, complained that the profits from his works were not sufficient for his maintenance, he went the very next day to him, and purchased all the pictures which he found in a finished state. The manner in which he conducted himself towards his enemies, and those who were envious of his brilliant reputation, was as wise as it was generous. The insinuations of the painter Rombouts, who did all in his power to detract from his merits, he refuted by his famous work, the Descent from the Cross, in the Cathedral of Antwerp. To Abraham Jansens, who challenged him for a wager to paint a picture with him, and submit their rival pretensions to the decision of the public, he replied that this was quite unnecessary, as he had long submitted his works to the judgment of the whole world, and he advised him to follow his example. The slanderous detractions of Cornelius Schut he requited in another manner. He paid him a visit, praised his pictures, and inquiring their prices, declared he would buy them himself for the sums named: further, he assured him that in case he should ever be without employment he might always reckon on his assistance. And when his enemies had spread the report abroad that he employed Snyders, Van Uden, and Wildens, because he was himself incompetent to paint animals and landscapes, he replied to the imputation by executing with his own hand four landscapes and two lion-hunts, in such a manner as to silence the most envious. In further confirmation of Rubens' good sense and practical turn of mind, the following anecdote may be cited. While engaged in the profitable task of illustrating the important events in the life of Marie de Medicis, in a series of twenty-one pictures, a painter named Brendel, whose mind was affected by the pursuit of alchemy, proposed to Rubens to associate with him in search of the philosopher's stone, assuring him that he was on the eve of discovering it, and offering to divide with him the expected gains if he would advance a sum sufficient to prepare the laboratory and the necessary materials. Rubens, after listening to him with patience, replied "Master Brendel, you have come just twenty years too late, for so long is it since I first discovered the true philosopher's stone in my palette and pencils."

The large landscape in the National Gallery, an idea of which may be conveyed by our frontispiece, "shows, as in a magic mirror, the beautiful and fertile Brabant in its luxuriant verdure, illumined by the morning sun. Every thing that art can effect by single trees, by shadows of clouds, to produce variety in an extensive level surface is done here, and the execution so minute that the trees are animated by singing birds: the landscape is likewise enlivened by numerous figures of men and animals."—WAAGEN*.

* We cannot take leave of the name of this eminent connoisseur without expressing our obligations to his skilful essay on the life and writings of Rubens. It has recently been translated by Mr. Noel in the spirit of the original, and Mrs. Jameson has edited it in her usual agreeable manner.

THE COCHINEAL INSECT,

(*Coccus cacti.*)

THE remarkable insect whose history and habits we are about to lay before our readers belongs to a family which is placed by naturalists in the order *Hemiptera*. This order receives its name from the circumstance that a great number of the insects which compose it have wings partly horny, and partly consisting of membrane, and moreover terminating very abruptly, hemiptera signifying "half wing." Although the cochineal insect differs from the larger proportion of insects in this order, by having, in the case of the male, two membranaceous wings, and in that of the female none at all, yet its relation to them in other respects, such as the conformation of the mouth, and the manner in which it takes its food, is so perfect that it is not considered desirable to separate it from the order on that account.

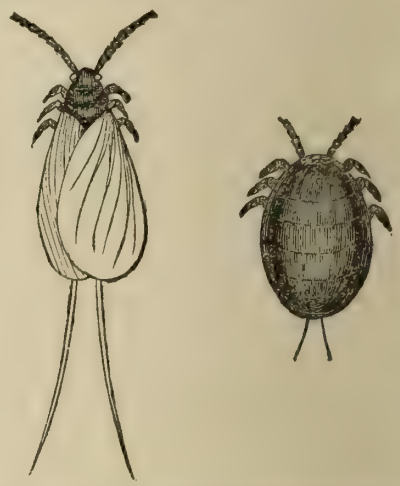
The cochineal insects are all very small and delicate, and singularly remarkable for the difference of form in the sexes. The body of the male is much smaller than that of the female, but it is provided with two large wings, which make the difference in size less apparent. These wings are placed horizontally, and are covered with remarkably fine nervures. The antennæ of the male insect are also long, with eleven distinct articulations: the head is round, the eyes small. The body of the female is oval-shaped, without wings, flat; the antennæ short, with articulations very little distinct. The mouth consists of a small conical bill and sucker, by means of which the insect feeds on the juices of vegetables.

In the early stage of their existence, the male and female cochineals are scarcely to be distinguished from

each other. They are said to have the appearance of tiny red tortoises, and to be very active in feeding upon stems and leaves, which they pierce by means of their sharp beaks even to the very centre of the shoot, causing the sap to flow in abundance, and doing much injury to the plant. Some of the species are great pests in our hot-houses and green-houses on this account. During this, the more active period of their existence, the insects continue to increase in size, but the period soon arrives when the sexes undergo that singular difference of transformation above alluded to. All the insects affix themselves securely to the surface of plants or stems, and after a short time the male insect appears in his new and elegant form of a fly, while the female only changes her skin and remains fixed to the bark, becoming in appearance more and more assimilated to it. Indeed, so near is the resemblance to a gall, in individuals of this sex, that they are often mistaken for such, and have obtained in consequence the appellation of *gall insects*. They are usually found near the insertion of the stems in plants, and resemble little convex masses more or less oval, in which it is impossible to distinguish, even with the microscope, either head or feet, but merely the segments of the body. This is at the period when they are about to lay their eggs, and the circumstances connected with this process are very curious, and unlike what takes place in other insects. The eggs are very numerous, and as fast as they are laid the mother accumulates them beneath her body, which gradually dwindles in size until it becomes a mere pellicle, or thin membrane, inclosing the brood. The mother then dies, but her dried body still remains, and forms a sort of shell or cocoon, for the protection of her offspring. When the young ones are hatched they soon make their way from beneath their scaly covering, and commence those ravages, which, on account of the vast number of the insects, are so formidable as to lead to various plans for getting rid of the annoyance. The plants more particularly infested by these insects are, orange-trees, fig-trees, and olives; though some of the species are common on our vines, and hot-house plants. The chief interest attaching to the cochineal insects arises from their commercial importance as an article of importation, and from their value to our manufactures as yielding a rich and beautiful scarlet dye. Two of the species only are used in the arts, and for these we are indebted to the New World. The finer kind is known as the *Meteque*, because it is gathered at Meteque, in the province of Honduras; the other is called *woodland* or *wild cochineal*.

The plant on which the fine cochineal is reared in Mexico is the *Cactus opuntiæ*, or *Opuntia Hernandezii*. It is a large shrub, the berries of which are eaten by the Indians of Mexico, as are the berries of the majority of the cactus tribe, as well as the germs of the flowers. The flowers of the cactus opuntiæ are small and of a deep red colour, and it is to the juices of the plant that the colour of the cochineal is attributed. The Indian name of this cactus is *nopal*, and the plantations formed of it, for the sake of rearing the cochineal, are called *nopaleries*. The culture of the nopals consists merely of weeding out injurious herbs that might interfere with the growth of the plants, so that one man is able to keep a plantation in proper order, the most considerable of these plantations not being more than two acres in extent.

On the return of the fine season in Mexico, which happens about the middle of October, the female cochineals of the last brood, which have been preserved on branches of the cactus, within doors, by the Indians, during the rains, are placed in the nopaleries in the following manner. Eight or ten female insects, which have already some young ones, are put into a little nest, made of flax or cotton: this nest is attached to the thorns with which the leaves of the cactus are armed, and the bottom of the nest is directed towards the sun, that the little family may be the sooner disclosed. The young cochineals issue from these nests in great numbers, for each female produces some thousands, which are at first no larger than the point of a pin, of a red colour, and covered with white dust. The young cochineals soon spread themselves over the leaves of the plant on which they were hatched, and attach themselves to it altogether. If they are torn from the leaves after they have become fixed, the proboscis breaks with which they take in their nourishment, and the insects perish in consequence. They remain only ten days in the larva form, and then become perfect insects. The females live about two months, and the males only half that time. According to M. Thierry de Menonville, there are six generations of these insects in the year, and if it were not for the casualties they are liable to, they might all be gathered. But it appears that the number of crops actually gathered every year is three, the first being taken towards the middle of December, and the last in the month of May. The first consists of those insects which have laid their eggs and are dead: these are less valuable than the rest, and lose much of their weight in drying. The second and third gatherings consist of the cochineals that have just begun to produce their young. In detaching these from the leaves, a knife is used, the edge and point of which are blunted, and this is carefully passed between the leaf and the insect, that the plant may not receive injury. This process causes the cochineals to quit their hold, and fall off into a vessel which is placed to receive them.



MALE AND FEMALE COCHINEAL INSECTS (MAGNIFIED.)

The Indians have different methods of depriving the cochineal insects of life, and on these methods depend principally the different colours of those which are brought to Europe. Some Indians put the insects into a basket, and plunge them into boiling water, afterwards exposing them to the sun to dry. Others put them into a hot oven, or on chafing-dishes, but the boiling water appears to be most efficacious. The insects, while alive, are covered with a white powder, which the hot water partially removes, making them to appear of a reddish-brown colour: in this state they are called *renagrida*. Those which are destroyed by the heat of an oven do not lose this powder, but remain of an ashen gray: they are called *jarpeada*. Some die upon the plants, and assume a blackish hue: these are called *negra*. The cochineals that have been taken alive from the plants lose two-thirds of their weight in drying, but the dead insects taken from the nests lose three-fourths. The cochineals being once dried may be kept in wooden coffers for an indefinite length of time, without sustaining any injury, or losing a particle of their tinctorial property.

Such is the history and management of the fine or cultivated cochineal, called by the Spanish name

grana fina, first discovered in Mexico in 1518, and long taken by Europeans for a seed. The wild cochineal lives in the woods, and feeds on a thorny cactus, from which the most skilful workmen cannot gather a sufficient quantity daily to remunerate them for their trouble, but it is found that when the wild cochineal is cultivated on the nopal of the gardens it is more easily separated from the plant than the fine sort, and on this account it is cultivated by the growers, though decidedly inferior to the *grana fina*. The wild cochineal is smaller than the other, and is covered with a cottony down, which increases its bulk with a matter useless in dyeing: it yields therefore in equal weight, much less colour, and is of inferior price to that of the fine cochineal.

In a future article we shall describe a few other species of the cochineal family, together with the uses to which these insects are applied; but we may here state, the French colonists of Algiers have undertaken the cultivation of the cochineal with great success. There have been three generations of the insect in the course of a year and a half, and in a very short period a thousand square feet of cactus will be inhabited by this precious insect, so that it may be fairly said to be acclimated in that part of the world.

THE MECHANISM OF A FEATHER.

It has been remarked that if a mechanic had never seen nor heard of any other animals than quadrupeds, he would not have believed it possible that a creature of great weight could have been constructed to fly through the air, and rest on it with as much security as those walk and rest upon the ground; still less would he have suggested the means.

Yet, notwithstanding the difficulties which appear to encompass the subject, how easily and how admirably have they been overruled by the working of the Almighty Power! The general construction for this purpose consists in the conversion of the fore extremities into wings, the enlargement of the breast-bone with its powerful muscles, the extent of the lungs, the hollowness of the bones, and the levity, compact arrangement, and strength of the feathers. It is to this last particular that we would direct the attention of our readers, as presenting much that is worthy of notice and admiration.

The structure of feathers is calculated in a high degree to combine the qualities of lightness and strength. The stem of the quill is made of horny materials which are tough, pliant and elastic, and disposed in the most advantageous manner for resisting flexion by being formed in a hollow cylinder. The vane of the feather is composed of a number of flat threads, or filaments, so arranged as to oppose much greater resistance to a force striking perpendicularly against their surface than to one which is directed laterally. On examining these filaments attentively, we find that they appear to adhere to one another, and yet there is no glutinous matter to cause this adhesion. The microscope enables us to discover the cause, and reveals to us a number of minute fibrils, arranged along the margin of the laminæ, and calculated to catch upon and clasp one another when brought within a certain distance.

To render the construction of a feather as plain as possible to our readers, we must describe its first formation, and subsequent progress and structure; our knowledge of which has been so much advanced by the researches of M. Frederick Cuvier.

The first downy covering of a young bird consists of minute filaments collected in tufts of ten or twelve each. These tufts grow from the upper end of bulbous roots implanted in the skin, beneath which the apparatus for the formation of the feathers is gradually being constructed. The downy covering soon falls off, and then we begin to notice a number of minute cones, which in a few days become elongated into cylinders with pointed extremities. Within these cylinders the wondrous work is going on, which ends in the development of the perfect feather. The materials of the future feather begin to be formed at the pointed extremity of the cylinder, and are successively deposited and fashioned into their proper shapes, and so extensive is the system of operations that it has been likened in its various stages to the proceedings in a large manufactory.

By examining a common feather we shall see that the posterior surface of the solid part of the stem, s, (fig. 1,) is divided into two parts by a longitudinal groove, from either side of which proceed a series of laminæ, which with their fibrils compose what is called the vane of the feather. The lines from which the laminæ arise approach one another at the lower part of the stem, and meet at a point where the solid part of the quill terminates, and where the transparent tubular part T begins. This point, O, has a small orifice leading to the interior of the quill, and at the lower extremity, L, is another orifice. Now, respecting the order in which this feather is formed, as discovered by the elaborate investigations of M. F. Cuvier, the following is an abridged account. Fig. 2, represents the cylinder or matrix in which the feather is formed. A is the apex or conical part, B the base, by which it is attached to the skin. A white line is seen running longitudinally the whole length of the cylinder, and a corresponding one is seen on the opposite side. These represent the situation of the front and the back part of the stem of the future feather. When the cylinder is laid open horizontally, (fig. 3,) it is found to be composed of a sheath or capsule, and of a central pulpy mass, termed the bulb. The capsule consists of several membranous layers (C, E, S, I,) which are more consolidated near the apex, but gradually become softer and more delicate towards the base, where their formation is only beginning to take place.

Fig. 1.

Fig. 2.

Fig. 3.

The vane of the feather is the part which is first formed, and the construction of the laminæ and fibrils of which it is composed is effected in the space between the outer capsule, C, and the central bulb, B, in a manner which is exceedingly remarkable. Instead of being deposited in successive layers, the laminæ are cast in moulds, where they harden, and acquire the exact shape of the cavities. The formation of these moulds appears to be due to an exterior, E, and interior, I, membrane, the one enveloping the other. These membranes are separated by a series of partitions, with narrow spaces between them, constituting so many compartments for the deposition of the material of each laminæ. The course of these channels and their junction at the back of the matrix is seen at S, (fig. 3.)

After the materials for the laminæ have been supplied, the next office of the bulb is to construct the stem of

the feather, and to unite the laminæ to its sides. Wonderful indeed is the process by which this is effected. The bulb becomes divided into two portions, and each portion is employed in depositing the plate of horny substance which may be noticed on the front and back part of the solid end of the quill. The anterior portion of the bulb which is engaged in forming the external plate, has no sooner completed its task than it begins to elaborate the spongy substance which is to connect the two plates: meanwhile the other portion of the bulb embraces the inner plate, and gradually folds it inwards till its sides meet at the middle groove along the back of the stem. During the process of filling up the stem, the anterior part of the bulb exhibits a series of conical-shaped membranes, as seen in the section, (fig. 4,) the points of the cones being directed upwards and their intervals being occupied by the spongy substance in different stages of consolidation, and more perfect as they are situated nearer the apex of the stem.

Fig. 4.

While the construction of the feather is thus advancing below, those parts which are completely formed rise above the surface of the skin, still enveloped in their protecting capsule, but which, from the action of the air, and from the obliteration of the vessels that nourished it, now shrivels and falls off in shreds, leaving the successive portions of the feather to come forth, and the laminæ to unfold and assume their proper shape. This goes on until the principal parts of the vane and stem are completed, when a different kind of action takes place. The posterior portion of the bulb now contracts itself, and brings the edges of that surface of the stem closer together, until at last they unite at the superior orifice, o, (fig. 1). With this its office ceases, and all that remains of its substance is a thin membrane which adheres to the outside of the barrel of the quill and must be scraped off before the latter can be used as a pen. But the anterior portion of the bulb has still an important office to perform; it now ceases to deposit the spongy substance, and forms instead a transparent horny material over the whole of its external surface; but as it retires towards the root it leaves a succession of very thin pellucid membranes in the form of cones, which, when dried, form what is termed the pith of the quill. The last remnant of the bulb is seen in the slender ligament which passes through the lower orifice, and preserves the attachment of the feather to the skin. In the process of time, this also decays, and then the feather falls off, preparatory to the formation of another. Thus at every moult, which occurs annually, or even oftener, a new cylinder is produced, and the same complicated process is again carried on which we have here attempted to describe.

It is impossible not to be struck with the admirable art and foresight displayed in the series of operations by which a feather is formed. Nor can we regard the varieties of form, or the brilliancy or delicacy of colour in these beautiful productions, without feeling bewildered at the multiplicity of operations which these imply. The remarkable form of a quill feather is thus noticed by Macculloch.

Taking any one quill feather from a wing, we see that it possesses a peculiar double curvature. How was this effected when every portion must have been formed by a separate vessel; and why was it not continued in a straight line from that quill of which it is a prolongation? It is a most delicate and difficult form to have been produced in any manner; being even more so than the cornea, or the lens of the eye; yet it is invariable, while mathematics cannot assign either of those curves. But if it is difficult to conjecture the mode of proceeding as to a single one of these feathers, what does this difficulty become, when we find that no two possess the same curvatures, in either direction, while all are double curves? The differences are of the most evanescent and unassignable nature; while thus is the peculiar and necessary form of the wing produced. Had a mechanic planned a wing, and allotted all the portions, whether to one workman or more, we know well what the calculations must have been, and what the drawings, that every feather should thus unite to produce a single structure; as we know that no engineer can plan a far more easy machine, so that every part shall fit correctly and act truly for the first time. Yet we admire even these imperfect works, and forget to admire the Artist who planned and executed, and whose most delicate and difficult works came at once from His hand, perfect.

The example of a peacock's feather is taken by the same accomplished writer as a proof of the minuteness and complication of the vascular mechanism; for every point of every colour must have required its producing vessel, and every different colour and gradation of tint must have demanded one of different powers. The precision of place in all these must have been perfect, since there is no error of pattern, either in colouring, gradation, or drawing. "The star" formed by one feather "was commenced, or calculated, in miniature and in package in the body of the quill: it quitted this place, it advanced with the elongation of that, to a distance of three feet, enlarging in its progress, and at that distance from its obscure and unintelligible native seat, it is the accurate, the complicated, and the beautiful plane and picture that we see."

None but the unreflecting or the unbelieving can contemplate the wondrous operations we have attempted to describe without being impressed with a sense of the boundless and incomprehensible power of the Almighty Hand, which is ever executing that which to human apprehension seems impossible.

SPARE MINUTES.

MEDITATED RESOLVES AND RESOLVED MEDITATIONS.

I SEE that candle yields me small benefit at day, which at night much steads me: and I know the cause is not because the candle's light was less at day, but because the day's light is less in the evening. As my friend's love to me, so mine to my friend may be at all times alike; but we best see it, when we most need it: and that, not because our love is then greater, but our want. Though then I welcome a courtesy according to my want, yet I will value a courtesy according to its worth. That my fortunes need not my friend's courtesy is my happiness: should my happiness slight my friend's courtesy, it were my folly.

I SEE that candle makes small show in the day which at night yields a glorious lustre, not because the candle has then more light, but because the air hath then more darkness. How prejudicial then is that ambition, which makes me seem less than I am, by presuming to make me greater than I should be. They whose glory shines as the sparks amongst stubble, lose their light, if compared to the Son of glory. I will not seat myself higher than my place, lest I should be disgraced to a humility; but if I place myself lower than my seat, I may be advanced to the honour of, *Friend, sit up higher*. I had rather be exalted by my humility, than be brought low by my exaltation.

I SEE that candle which is as a sun in the darkness, is but as a darkness in the sun: the candle not more lightening the night's darkness, than the sun darkening the candle's light. I will take heed then of contention, especially with great ones. As I may be too strong for the weaker, so I must be too weak for the stronger. I cannot so easily vanquish mine inferiors, but my superiors may as easily conquer me. I will do much to be at peace with all men, but suffer much ere I contend with a mighty man.

IT is the ambitious folly of too many to imitate rather greatness than goodness. They will sooner follow the example of their Lord, than the precepts of their GOD. I will alway honour greatness, I will only imitate goodness: and rather do good without a pattern, than commit evil in imitation. Tis better to be saved without a precedent, than to be damned by example.

I SEE when I follow my shadow it flies me; when I fly my shadow, it follows me. I know pleasures are but shadows, which hold no longer than the sunshine of my fortunes. Lest then my pleasures should forsake me, I will forsake them. Pleasure most flies me when I most follow it.

IT is not good to speak evil of all whom we know bad: it is worse to judge evil of any, who may prove good. To speak ill upon knowledge, shows a want of charity; to speak ill upon suspicion shows a want of honesty. I will not speak so bad as I know of many: I will not speak worse than I know of any. To know evil by others, and not speak it is sometimes discretion: to speak evil by others and not know it, is always dishonesty. He may be evil himself who speaks good of others upon knowledge; but he can never be good himself, who speaks evil of others upon suspicion.

A BAD great one is a great bad one: for the greatness of an evil man, makes the man's evil the greater. It is the unhappy privilege of authority, not so much to act, as teach wickedness, and by a liberal cruelty, to make the offender's sin not more his own than others. Each fault in a leader is not so much a crime as a rule for error: and their vices are made (if not warrants, yet) precedents for evil. To sin by prescription is as usual as damnable: and men run post in their journey, when they go to the devil with authority. When then the vices of the rulers of others are made the rules for vices to others, the offences of all great ones must needs be the greatest of all offences. Either then let me be great in goodness, or else it were good for me to be without greatness. My own sins are a burden too heavy for me, why then should I lade myself with other offences?

To speak all that is true, is the property of fools: to speak more than is true, is the folly of ——— too many. He that spends all that is his own, is an unthrifty prodigal: he that spends more than his own, is a dishonest unthrift. I may sometimes know what I will not utter, I must never utter what I do not know. I should be loth to have my tongue so large as my heart, I would scorn to have my heart less than my tongue. For if to speak all that I know shows too much folly, to speak more than I know shows too little honesty.

[ARTHUR WARWICK. 1637.]

RURAL ECONOMY FOR THE MONTHS.

VI.

'Tis pleasant on the steep hill side,
Where lies in view the prospect wide
Of cultured farm, with interchange
Of tilth and pasture, cot and grange,
At ease the careless limbs to stretch
Beneath the broad o'er-arching beech;
And, lighted by the sky serene,
Mark the full HAY-FIELD'S varied scene
Here as the swarthy mowers pass,
Slow through the tall and russet grass,
In marshalled rank from side to side,
With circling stroke and measured stride
Before the scythe's wide sweeping sway,
The russet meadow's tall array
Falls, and the bristly surface strows
With the brown swathe's successive rows.
Here the blithe hamlet's gather'd throng,
With toothed rake, and forked prong,
Maidens and boys, in order due,
The mowers' ridgy track pursue;
Turn with just care the tedded hay,
Alternate to the mellowing ray;
Or, loosely o'er the sunny mead,
The scattered rows promiscuous spread;
Or what may fill the rounded lap
In smaller heaps collected wrap;
Or in more broad and loftier piles,
Build the rich produce; while with smiles,
At hand the joyous farmer eyes,
Safe from the assault of lowering skies.
O'er the thronged field to stature grown
Complete the haycock's tawny cone.—MANT'S *Months*.

AMONG the rural occupations of the present month, that which excites the most general interest throughout the country, and which scarcely yields even to the corn-harvest in the pleasurable feelings awakened among all classes and in all districts of our land, is the business of hay-making, to which we shall, therefore, chiefly direct our attention. For although this occupation, like all others, is dependent on the season, as to the time at which it is to be commenced, the month of June in favourable years may be reckoned the period of greatest activity, and before its close many a flowering pasture has yielded its beauties to the mower's scythe.

Hay-making is carried to great perfection in the neighbourhood of the Metropolis, where the demand is necessarily great, on account of the vast number of coach and saddle-horses, as well as cows to be supplied. Our description of hay-making is, therefore, applicable to that practised by the Middlesex farmers in general, and explained in the agricultural survey of the county. When the grass is nearly fit for mowing the farmer endeavours to select the best mowers, in number proportioned to the quantity of his grass, and the length of time it would be advisable to have it in hand, which, having done, he lots it out either as piece-work, or to be mown by the acre. In the latter way, each man mows from an acre and a half to an acre and three quarters per day, during the whole season. Five hay-makers (including loaders, pitchers, stackers, and all others) are provided to each mower. These are paid by the day, the men attending from six till six, the women from eight till six. When necessary, they work an extra hour or two in the evening, for which they receive a proportionate allowance. The mowers work from three, four, or five o'clock in the morning, till seven or eight at night, resting an hour or two in the middle of the day. The operations of the first day are as follows:—

All the grass mown before nine in the morning is tedded, in which great care is taken thoroughly to loosen every lump, and to strew it evenly all over the ground. By this regular method of tedding grass for hay, the hay will be of a more valuable quality, will heat more equally in the stock, and will consequently not be so liable to damage or fire; it will also be of much greater quantity when cut into trusses, and will sell at a better price, for when the grass is suffered to lie a day or two, before it is tedded out of the swath, the upper surface is dried by the sun and winds, and the interior part is not dried, but withered, so that the herbs lose much in quality as well as quantity. Soon after the tedding is finished the hay is turned with the same degree of care and attention, and if, from the number of hands, they are able to turn the whole again they do so, or at least as much of it as they can till twelve or one o'clock, at which time they dine. The first thing to be done dinner is to rake it into what are called single wind-rows; and the last operation of this day is to put it into grass-cocks.

The business of the second day commences with tedding all the grass that was mown the first day after nine o'clock, and all that was mown this day before nine o'clock. Next, the grass-cocks are well shaken out into *staddles*, or separate plots, the spaces between these plots being raked clean, and the rakings mixed with the other hay, that all may dry of a uniform colour. The next business is to turn the staddles, and then the grass that was tedded the first part of the morning once or twice, as described for the first day. This should be done before twelve or one o'clock, so that the whole may lie to dry while the work-people are at dinner. After dinner the first thing to be done is to rake the staddles into double wind-rows; next to rake the grass into single wind-rows; then the double wind-rows are put into bastard-cocks; and the wind-rows into grass-cocks.

On the third day the grass mown and not spread into cocks on the second day, and also that mown on the early part of this day, is first tedded in the morning, and then the grass-cocks are spread into staddles as before, and the bastard-cocks into staddles of less extent. These smaller staddles, though last spread, are first turned, then

those which were in the grass-cocks, and next the grass is turned once or twice before twelve or one o'clock. If the weather has proved sunny the hay which was last night made into bastard-cocks, will on the afternoon of this day be in a fit state to be carried, but if the weather should on the contrary have been cool and cloudy, no part of it probably will be fit to carry. When this is the case, some of the processes above described must be repeated during the afternoon, and the morning of the fourth day will probably be the proper time to carry the more advanced part of hay, while the remainder will continue to require the same treatment as before. Thus field after field is rapidly cleared during propitious weather; while, if the season be rainy and unfavourable, the farmer has frequent trials of his patience, and is doomed to meet with many disappointments. Yet, with all his trials, he is far better off in the hay-making season than many of the Hebridean or the Swedish farmers, who cannot get their crop of hay together without suspending it on poles, trees, or rods to dry.

It is not unfrequent in the county of Middlesex to see large hay-barns constructed of timber, and open to the south and east, or even on all sides. Some of these are capable of holding from thirty to fifty or even a hundred loads of hay. They are chiefly useful during a catching and unsettled hay-harvest, and also to afford opportunities of cutting, binding, and weighing hay in wet or windy weather, when these operations could not be performed in the field. The expense of erecting these barns is considerable, and if, as some agriculturists affirm, the hay is more apt to heat in them than when exposed to the air, they are to be regarded as of very questionable utility.

The general rules to be observed in hay-making are self-evident to those who are at all acquainted with rural affairs. It is highly necessary that the grass should be protected as much as possible day and night from rain and dew by cocking. Care must also be taken not to have more grass in hand at any one time than can be managed according to the foregoing process. This may be accomplished by duly proportioning the number of hay-makers to mowers. In showery weather the grass may sometimes be suffered to lie three, four, or even five days in swath. But before it has lain long enough for the under side of the swath to become yellow, particular care should be taken to turn the swaths with the heads of the rakes. In this state it will cure so much in about two days as only to require being tedded a few hours when the weather is fine, previously to its being put together and carried. Hay may thus be made and carried at a small expense, and of a moderately good colour, but the tops and bottoms of the grass are insufficiently separated by it.

The hay-tedding machine is much used near London, and also in extensive parks, &c., in various parts of the country. Its value in the neighbourhood of the Metropolis is enhanced by the high price of manual labour, and the scarcity of hands sometimes experienced. This useful implement is especially adapted for making natural or meadow-hay, which requires to be much more frequently turned and more thinly spread out than hay, clover, and rye grass. It consists of an axle and a pair of wheels, the axle forming the shaft of an open cylindrical frame, formed by arms proceeding from it, from the extremity of which bars are stretched, set with iron prongs, pointing outwards, and about six inches long, and curved. There is a crank by which this cylinder of prongs is raised from the ground when the machine is going to and returning from the field, or when it is not wanted to operate. It is drawn by one horse, and is found to answer perfectly well as a tedding machine. It is computed that a boy and horse with the machine will ted as much in an hour as twelve or fifteen women. It is painful, however, to the feelings of those who love the picturesque appearance of our fields in hay-making time, to see a machine in action, twirling about the flying grass, and superseding the labours of the ruddy country lasses in their motley garments, and the sunburnt youths that were wont to accompany them.

In Derbyshire, and in the North Riding of Yorkshire, the practice of salting the hay at the time of stacking is very general. The salt checks fermentation, and prevents the hay from becoming mouldy, and cattle eat it with avidity. Sometimes a little straw is mixed with the hay, for the sake of imbibing moisture and still further checking fermentation. This sort of hay, if salted, is eaten with more avidity, though mixed with straw, than hay of a better quality that is not salted. Cattle will also thrive well upon it. The quantity recommended is a peck of salt to a ton of hay.

Our notice of hay-making leaves us little space to dwell on the other operations of the month, which are the ploughing and cleansing of fallows intended for wheat; sowing the main crops of Swedish and other turnips; and in many parts of our island, the shearing of sheep. This latter operation is sometimes performed in May, and if the weather continue mild and warm, the sheep will thrive all the better without the incumbrance of their heavy load of wool. But should the cold weather return, as it frequently does, at a very late period of the spring, more particularly in the northern parts of the kingdom, it were far better that the fleeces had not been removed.

The present is the latest period for weeding and destroying the noxious productions of the soil, and much vigilance is required to do this effectually; indeed, so prone are some soils to particular sorts of weeds that it is a task of much difficulty to clear them well. The most careful agriculturist is also frequently annoyed by finding that he has introduced a variety of weeds into his crop along with the manure which he has found it necessary to procure from a distance. Lands overrun with couch grass, and other root-weeds of the same class, by being laid down to grass for half-a-dozen years will be found in most cases completely freed from them. A hard and dry soil is more favourable for the destruction of root-weeds than one of a contrary description. Some of the most pernicious weeds are darnel, coltsfoot, and charlock. These, with the numerous tribes common on farms, must, in order to be removed at all, be got rid of while they are young.

SIR THOMAS ROE took out some English mastiffs to India, as a present for the Great Mogul: they were of marvellous courage. One of them leaped overboard to attack a shoal of porpoises, and was lost. Only two of them lived to reach India. They travelled each in a little coach to Agra: one broke loose by the way, fell upon a large elephant, and fastened on his trunk: the elephant at last succeeded in hurling him off. This story delighted the Mogul, and these dogs in consequence came to as extraordinary a fortune as Whittington's cat. Each had a palanquin to take the air in, with two attendants to bear him, and two more to walk on each side and fan off the flies: and the Mogul had a pair of silver tongs made, that he might when he pleased feed them with his own hand.

There was a Newfoundland dog on board the Bellona, who kept the deck during the battle of Copenhagen, running backward and forward with so brave an anger, that he became a greater favourite with the men than ever. When the ship was paid off after the peace of Amiens, the sailors had a parting dinner on shore. Victor was placed in the chair, and fed with roast beef and plum-pudding, and the bill was made out in Victor's name.—SOUTHEY's *Omniana*.

LONDON:
JOHN WILLIAM PARKER, WEST STRAND.
PUBLISHED IN WEEKLY NUMBERS, PRICE ONE PENNY, AND IN MONTHLY PARTS, PRICE SIXPENCE.
Sold by all Booksellers and Newsvenders in the Kingdom.

THE

Saturday Magazine.

No. 638. JUNE 11TH, 1842. {PRICE ONE PENNY

JAVANESE SKETCHES. II.

A JAVANESE VILLAGE.

SKETCH OF THE NATIVES.

THE natives of Java belong to the widely-diffused race of the Malays. Their stature is rather below the middle size: they are well shaped, and their only attempts to improve upon nature consist in the ridiculous custom of compressing the waist within the narrowest limits, (a custom unfortunately not confined to the Javanese alone,) and the absurd practice of filing and blackening the teeth, it being considered disgraceful to allow them to remain "white like a dog's." Deformity is rare among the Javanese. The forehead is high, the eyebrows well marked and distant from the eyes; the colour of the eye is dark; the nose small and somewhat flat; the mouth is well formed, but the lips are large, and are further disfigured by the use of betel*. The cheek bones are usually prominent; the beard scanty; the hair of the head lank and black, but sometimes waving in curls, and partially tinged with a deep reddish-brown colour. The countenance is mild, placid, and thoughtful, and easily expresses the various passions and emotions of the mind. Their complexion may be considered rather as yellow than copper-coloured or black.

The females are not so good-looking as the men, and to Europeans many of them appear very ugly. But among the lower orders Raffles attributes much of this deficiency of personal comeliness, to the severe duties which they have to perform in the field, to the hardships they have to undergo in carrying oppressive burdens, and to exposure in a sultry climate.

In manners the Javans are easy and courteous, and respectful even to timidity; they have a great sense of propriety, and are never rude or abrupt. In their deportment they are pliant and graceful, the people of condition carrying with them a considerable air of fashion, and receiving the gaze of the curious, without being at all disconcerted. In their delivery they are in general very circumspect, and even slow, though not deficient in animation when necessary.

The cottage or hut of the peasant is usually formed of bambus, flattened and plaited together, with a roof of long grass or leaves. It includes a room partitioned off for the heads of the family, and an open apartment on the opposite side for the children. Light is admitted through the door; and this is not found to be inconvenient in a climate where all domestic operations can be carried on in the open air, and where shade from the sun, rather than shelter from the weather, is required. The women perform their usual occupations of spinning or weaving on an elevated verandah in front, where they are protected from the rays of a vertical sun, by an extended projection of the pitch of the roof. These cottages are never solitary, but congregated into villages of greater or less extent. To each cottage is attached a garden, which the cottager regards as his peculiar patrimony, and cultivates with peculiar care.

* See an article on the *Betel Chewers of the East*. *Saturday Magazine*, Vol. XIX., p. 77.

He labours to plant and rear in it those vegetables that may be most useful to his family, and those shrubs and trees which may at once yield him their fruit and their shade; nor does he waste his efforts on a thankless soil. The cottages or assemblage of huts, that compose the village, become thus completely screened from the rays of a scorching sun, and are so buried amid the foliage of a luxuriant vegetation, that at a small distance no appearance of a human dwelling can be discovered, and the residence of a numerous society appears only a verdant grove, or a clump of evergreens. Nothing can exceed the beauty or the interest, which such detached masses of verdure, scattered over the face of the country, and indicating each the abode of a collection of happy peasantry, add to scenery otherwise rich, whether viewed on the sides of the mountains, in the narrow vales, or on the extensive plains. In the last case before the grain is planted, and during the season of irrigation, when the rice fields are inundated, they appear like so many small islands rising out of the water. As the young plant advances, their deep rich foliage contrasts pleasingly with its lighter tints; and when the full eared grain, with a luxuriance that exceeds an European harvest, invests the earth with its richest yellow, they give a variety to the prospect, and afford a most refreshing relief to the eye. The clumps of trees, with which art attempts to diversify and adorn the most skilfully arranged park, can bear no comparison with them in rural beauty or picturesque effect.

Every village forms a community within itself, having its officers and priest, and a temple for religious rites. The dominant faith is that of Mahommed, mingled with many superstitious observances retained from the religion of their ancestors. The houses of the petty chiefs are distinguished by having eight slopes or roofs, four superior and four secondary. The houses of the chiefs or nobles are generally distinguished by their greater size. All the villages are fenced in by strong hedges of bambu and other quick-growing plants. In the larger towns and capitals much attention is paid to the due preservation of broad streets or roads, crossing in different directions.

The furniture of the huts is very simple; the bed is a fine mat with a number of pillows, with some party-coloured cloths generally extended over the head, in the form of a canopy or valance. They have neither tables nor chairs, but their meals are brought on large brass or wooden waiters, with smaller vessels of brass or china ware for the different articles served up. They sit cross-legged, and in common with other Mahommedans only use the right hand at their meals. They usually take up their food between the finger and thumb, and throw it into the mouth.

In the dwellings of the higher classes the articles of furniture are more numerous and less simple; and in the European provinces the natives have adopted much of the furniture and many of the habits of Europeans.

The men of the lowest class generally wear a pair of coarse short drawers, reaching towards the knee, with the jarit, or cloth, folded round the waist, and descending below the knees like a short petticoat. This cloth is always tucked up close round the waist while the labourer is at work or moving abroad, but loosened and allowed to descend to its full length in the presence of a superior. It is fastened round the waist by a belt. The Javans generally wear a jacket with short sleeves: this is either white, or more frequently of light and dark-blue stripes. A handkerchief is always folded round the head somewhat like a turban. While abroad they usually wear over it a large hat of leaves, or of the split and plaited bambu, which shelters them, like an umbrella, from the sun and rain. A coarse handkerchief is usually tucked into the waist-band, or a small bag is suspended from it, containing tobacco, betel, &c.

The dress of the women is not unlike that of the men: round the body is rolled a cloth, and they also wear a loose gown, of a blue colour, reaching to the knees, with long sleeves buttoning at the wrists. Both sexes wear finger-rings: those worn by the men are of iron, brass, or copper; those of the women, of brass or copper only.

The Javanese dress varies of course with the rank of the wearer. We need not describe it further, since a general idea of the costume of the different classes may be obtained by examining the figures which accompany these articles. Neither men nor women cut their hair, but allow it to grow to its natural length. The men usually gather it up on the crown of the head, twist it round, and fasten it by means of a semicircular tortoise-shell comb fixed in front; but among the higher classes, it is considered a mark of respect to let it flow in curls in the presence of a superior. The women confine their hair by gathering and twisting it into one large knot at the back of the head. Both sexes perfume their persons with fragrant oils, and adorn the skin with a variety of powders. The priests generally dress in white, and imitate the turbans of the Arabs.

The male Javan dress is never considered complete without the krís: this is a kind of dagger, with a blade of hardened steel, and of serpentine shape. Distinctions of rank are often expressed by the different modes of wearing this weapon. In the war-dress three krises are usually worn in the waist, one on each side, and the other behind. These consist of the krís which the wearer particularly calls his own, the krís which has descended to him from his ancestors, and the krís which he may have received on his marriage from his wife's father. The last is often placed on the left side, for immediate use. Although the natives at all times carry these dangerous weapons about their persons, yet they must be considered almost exclusively as personal ornaments, for it is very seldom that they are resorted to either as weapons of defence or offence.

The Javanese have but few prejudices regarding food. As Mahommedans they abstain from swine's flesh, and commonly from inebriating liquors. Their chief article of food is rice, but they are also well supplied with fish, flesh, and fowl. They are very fond of the flesh of the horse, but it is not lawful to kill this animal, except when maimed or diseased. The hide of the buffalo, cut into slices, soaked and fried, is a favourite dish. Various kinds of worms or grubs, found in the teak and other trees, are considered as dainties. White ants, in their different states, are one of the most common articles of food, in particular districts: they are collected in different ways, and sold generally in the public markets. Their extensive nests are opened to take out the chrysalis, or they are watched, and swarms of the perfect insect are conducted into basins or trays containing water, where they soon perish.

The cooking utensils are of the simplest kind. Rice is cooked by first pounding it several times in a trough, and then steaming it or boiling it in a small quantity of water. When steamed it is remarkably white and consistent, and in this state it is publicly exposed for sale in the markets and along the high roads. They are very fond of colouring their articles of food: they occasionally make their rice yellow and brown, and even turn their boiled eggs red for variety.

Salted eggs form an important article of their diet. Ducks' eggs are abundant, and are thus preserved:—they are enveloped in a thick covering made of equal parts of salt and ashes, or salt and pounded bricks; and being wrapped each in a large leaf, they are piled up in a tub or large earthen vessel. In ten days they are fit for use; but they are generally kept longer in the mixture, and being thoroughly impregnated with salt, can be kept many months.

On the northern coast a species of soy is prepared from prawns or shrimps: these are strewed with salt, and exposed to the sun till dry: they are then pounded in wooden mortars, dressed, and formed into masses resembling large cheeses: in this state they constitute an article of trade, and are distributed through the country.

The Javanese have two meals a day: the day meal just

before noon, and the evening meal between seven and eight o'clock in the evening. They have no regular meal corresponding with our breakfast, but those who go out early in the morning usually partake of a basin of coffee and some rice cakes before they quit home, or purchase something at one of the numerous stalls which line the public roads, where rice, coffee, cakes, soups, ready-dressed meats, and vegetables, are always to be procured.

In no country are the rights of hospitality more strictly enjoined, or more conscientiously observed. "It is not sufficient," say the Javan institutions, "that a man should place good food before his guest; he is bound to do more: he should render the meal palatable by kind words and treatment, to soothe him after his journey, and to make his heart glad while he partakes of the refreshment."

The Javanese are a sober, amiable, and industrious people; and although they prepare several kinds of fermented drinks they are moderate in the use of them. They have unfortunately acquired some vicious habits from their European rulers, among which the use of opium may be mentioned and deplored.

We are oftentimes in suspense betwixt the choice of different pursuits. We choose one at last doubtingly, and with an unconquered hankering after the other. We find the scheme which we have chosen answer our expectations but indifferently—most worldly projects will. We, therefore, repent of our choice, and immediately fancy happiness in the path which we have declined; and this heightens our uneasiness. We might at least escape the aggravation of it. It is not improbable that we had been more unhappy, but extremely probable that we had not been less so, had we made a different decision.—Shenstone.

That man and that woman who live together quietly and godlily, doing the work of their vocation and fearing God, hearing His word and keeping it, theirs is a religious house; theirs is the house that pleaseth God.—Latimer.

The difference of men is very great: you would scarce think them to be of the same species; and yet it consists more in the affections than the intellect. For, as in the strength of the body two men shall be of an equal strength, yet one shall appear stronger than the other, because he exercises and puts out his strength, while the other will not stir nor strain himself:—so it is in the strength of the brain; the one endeavours, and strains, and labours, and studies; the other sits still and is idle, and takes no pains, and therefore he appears so much the inferior.—Selden.

If we must naturalize that portentous phrase, *a truism*, it were well that we limited the use of it. Every commonplace or trite observation is not a truism. For example: A good name helps a man on in the world. This is nothing but a simple truth, however hackneyed. It has a distinct subject and predicate. But when the thing predicated is involved in the term of the subject, and so necessarily involved that by no possible conception they can be separated, then it becomes a truism, as to say, A good name is a proof of a man's estimation in the world. We seem to be saying something when we say nothing. I was describing to F—— some knavish tricks of a mutual friend of ours. "If he did so and so," was the reply, "he cannot be an honest man." Here was a genuine truism—truth upon truth—inference and proposition identical; or rather a dictionary definition usurping the place of an inference.—Charles Lamb.

Who can contemplate without astonishment the motion of a comet, running far beyond the orb of Saturn, endeavouring to escape into the pathless regions of unbounded space, yet feeling at its utmost distance the attractive influence of the sun; hearing as it were the voice of God arresting its progress and compelling it, after a lapse of ages, to reiterate its ancient course?—Bishop Watson.

ON THE POSITION OF BIRDS AT ROOST.

It may have occurred to some of our readers as an extraordinary circumstance, that the feathered tribes in general are capable of sustaining themselves during sleep in a position so little favourable to repose, as that appears to be which is shown in our wood-cut. It has been noticed, perhaps with surprise, that in this position birds not only sleep in perfect security, but resist the impulse of the wind, and the waving to and fro of the branches on which they rest.

The explanation of this fact was long ago given by the Italian naturalist Borelli, and his explanation has been confirmed by succeeding writers, and is indeed so simple that it may be verified by any one examining the structure of the bird's leg. Our second illustration gives a good idea of it, and represents at *a* the muscle which arises from the haunch-bone of the bird, and which at *b* becomes a tendon, and passes over the outer angle of the thigh-bone, from whence, winding round the leg to *c*, it passes over *that* outer angle likewise, and is finally inserted in the centre of the claw at *d*, where it divides and acts upon each of the toes, in compressing it or the reverse. From this arrangement it is evident that, when the leg is bent to the degree shown in fig. 1, the tendon must be strained much more tightly than it is in fig. 2: it must also be clear that this tightening of the tendon will act mechanically, and without any motion of the muscles, in closing the foot. And this is in fact the case, for when the bird is on its perch the mere weight of the body tends to bend all the joints of the limb on which it rests, and thus, without any muscular effort or volition on the part of the bird, the toes grasp their place of support in the most secure manner.

Many birds support themselves on their perch by means of one leg only, the other being folded close to the body; and in this attitude they are said to be at greater ease, and in a more secure posture than when they rest on both feet, and for this reason,—the weight of the body not being divided between the two points of support, presses the more heavily, stretches the tendons more effectually, and causes the foot to grasp the branch with a tighter hold.

The great expenditure of muscular power that is constantly going on in birds on the wing, makes it the more obviously necessary that there should be no impediment to a perfect state of rest during their roosting hours, and this there would of course be, had they, by any effort of their own, to support their nicely-balanced posture at such times. By the beautiful arrangement above described, the standing posture is their most perfect state of rest.

The formation of the leg and foot in birds is necessarily different from that of the same limbs in quadrupeds, for the foremost extremities being exclusively appropriated to flight, and framed in accordance with the properties of the atmosphere, the hind limbs are kept, as it were, subordinate to this end, and are elongated backwards at a considerable distance from the wings. In order, therefore, to bring the centre of gravity (sustained during flight by the wings) over the basis of support formed by the feet when the bird is at rest, the joints of the leg are bent at very acute angles, and that division which corresponds with the foot in quadrupeds is of much greater comparative length. In addition to this lengthening of the last joint of the leg, the toes are also lengthened and spread out so as to inclose a wide base, over which the centre of gravity is situated.

Thus these animals, while framed with an especial reference to their aërial movements, are adapted likewise to a state of rest, and are fitted to move with more or less facility on the ground. White, of Selborne, characteristically describes the walk of birds.

Most small birds hop; but wagtails and larks walk, moving their legs alternately: all the duck kind waddle; divers and auks walk as if fettered, and stand erect on their

tails ; crows and daws swagger in their walk ; woodpeckers use their tails, which incline downward, as a support when they run up trees ; parrots, like all other hook-clawed birds, walk awkwardly, and make use of their bill as a third foot, climbing and descending with ridiculous caution. All the poultry (*Gallinæ*) parade and walk gracefully, and run nimbly

Fig 1

Fig. 2

INSCRIBED IN A LADY'S POCKET-BOOK.

LIFE'S record what? but sins and follies past;
Be spent the days to come, as tho' the last:
Then this recording page shall mark the year
In which no sighs, but joys alone appear,
Time well bestow'd, stern duty done, sins mourn'd,
Each bright or darken'd day to praise or profit turn'd.—H.

ABLACTATION, *as our old dictionaries call it.*—Old Beuther, in calculating the number of years necessary for replenishing the world after the Deluge, allows two years for suckling a child. This therefore must have been the customary time of lactation in Spain. The Spaniards perhaps received it from the Moors, for Mohammed enjoins mothers to give their infants the breast during two complete years, if they will take it so long. Immediately after laying down this law, the Koran with its usual inconsistency, gives full permission to any body to break it.

King Joam III. of Portugal was not weaned till he was three years and a-half old, and then it was by an act of his own princely pleasure. In that same age it was a common custom in Germany to wean infants after the first month, feed them with cows' milk through a wooden tube, and administer the warm bath every third day.—SOUTHEY'S *Horæ Otiosiores.*

EVERY man has in his own life follies enough—in his own mind troubles enough—in the performance of his duties deficiencies enough—in his own fortunes evils enough—without being curious about the affairs of others.

MAN is not an isolated creature: he is a link of one great and mighty chain, and each necessarily has a dependence upon the other. In society he is like the flower blown in its native bed; in solitude, like the blasted shrub of the desert: neither giving nor receiving support, the energies of his nature fail him, and he droops, degenerates, and dies.

ON VOLTAIC ELECTRICITY.

IN a series of articles contained in the thirteenth and two following volumes of the *Saturday Magazine* we gave a familiar experimental sketch of electricity, commonly so called, and promised to extend our notice to the other departments of this beautiful and prolific science. At the time when our first series of articles was completed, the ground of electrical science was as it were broken up, preparatory to renewed cultivation: the labourers in the field were zealous and indefatigable, and they have already gathered in more than one harvest of new and important results. In the following series of articles we propose to complete our plan, and to present as popular a view as may be consistent with accuracy of the other departments of electrical science.

THE science of galvanism, or voltaic electricity, owes its origin to one of those apparently trifling circumstances which are probably of frequent occurrence, but which appear important only in proportion as the mind is cultivated and prepared to receive them, by previous study of natural phenomena. The rough diamond may be handled by thousands of persons incapable of appreciating its worth; new facts may present themselves to thousands of persons without making a single impression; but the favoured few know how to convert a rough, ill-looking stone into a costly gem fit to adorn the regal coronet, or the apparently insignificant facts into the gem of a new and important science.

In the year 1790, it happened that the wife of Galvani, professor of anatomy at Bologna, was preparing some frogs for the purpose of making soup, and being seated at a table, at which a pupil of the professor was working an electrical machine, the pupil happened to touch the exposed nerve of one of the legs of a frog with the blade of a knife, and observed that the limb was immediately thrown into convulsions. This circumstance was communicated to Galvani, and he at once proceeded to investigate the cause. He found that muscular contractions were excited in the leg of a recently killed frog, when two metals such as zinc and silver were made to touch, one the crural nerve, and the other the muscle connected with it, at the same time bringing the opposite ends of the metals into contact. Galvani supposed that the contractions of the muscles of animals generally were in some way due to electricity. He compared the muscle of an animal to a Leyden jar, charged by the accumulation of electricity on its surface, while the nerve of the animal he compared with the chain which passes into the interior of the jar, so that when a communication was made by means of a conductor between the muscle and the nerve, equilibrium would be suddenly restored, and a contraction of the muscular fibres would result. The progress of inquiry however disproved this ingenious theory.

Fig. 1

The accompanying figure shows the hind legs of a frog prepared for this experiment. The skin is removed, and on gently separating the muscles, the crural nerve *a a* is distinguishable like a white thread passing down them: *b* is a wire, passed under the nerves for the convenience of ensuring metallic contact; if the legs be now folded up and placed upon a plate of zinc, convulsions are produced whenever a metallic communication is made between the wire *b* and the zinc plate. Or we may

place the upper part of the limbs between a penny-piece and a half-crown piece, taking care that the metals are in contact at the top—if one of them be in contact with the muscle, and the other be depressed, so as to touch the nerve, the contractions will be observed as before.

This kind of excitability is retained much longer by cold-blooded animals after death, than by others, and they are affected by states of electricity so feeble as not to be indicated by the most delicate electrometers. A feeble spark, or the most trifling charge of a Leyden jar, is sufficient for the above experiment. It may also be performed with a live flounder, by placing it in a plate upon a slip of zinc, and putting a shilling on its back; then with a piece of wire connected with the zinc make occasional contacts upon the shilling, and at each contact strong muscular contractions are produced. A similar result is obtained with live worms, leeches, &c.

The unpleasant sensations which these animals are thus made to endure, may be received by the following simple experiment:—place a half-crown piece upon the tongue, and a penny-piece below it; no effect is produced while the metals are not in contact; but if we make them touch, a peculiar sharp, arid taste is perceived, and with some persons a flash of light passes before the eyes.

We have already given the hypothesis whereby Galvani sought to explain the above phenomena, but it was controverted by the celebrated Volta, professor of natural philosophy, at Pavia, who showed that the effect depended upon the contact of dissimilar metals, and not upon the connection made between different parts of an animal. He showed that contractions could not be excited by the application of two pieces of the same metal, and he referred the effect when different metals were employed to what is termed the *electro-motive* power of dissimilar metals.

If, for example, two discs of metal, one of zinc and the other of copper, be affixed at their centres to glass handles, and be placed in contact, they are found to be oppositely electrified: when they are removed from each other's influence, the zinc is found to be positive and the copper negative: hence it seems that a portion of electricity has passed from the lesser to the more oxidable metal, and this passage, or transfer, the nerve or muscle of the frog indicates in a very sensible manner.

The chemical properties of metals are much influenced by this disturbance of electricity. For example:—if we hold a strip of silver, and another of zinc, in a test glass containing dilute sulphuric acid, so that the metals do not touch each other, the zinc only will be attacked by the acid, but if we bring the two metals into contact, the silver will immediately become active, and a stream of hydrogen gas will proceed from both metals.

The experiment may also be varied by employing a weak solution of sulphate of copper. Place in it a strip of clean iron and another of silver, keeping them separate. The former will soon be coated with copper, and the latter will remain clean and bright, but if the strips be brought into contact, the silver will also acquire a cupreous coating.

It is to the genius and industry of Volta that we owe the first galvanic apparatus; and we may almost say, that although to Galvani belongs the glory of the first discovery of the site whereon to erect the noble superstructure of this beautiful science, yet Volta must be considered as the architect who drew the plans, laid the foundation, and assisted in the erection of one of the proudest monuments of modern science.

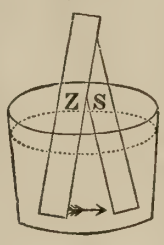
The voltaic pile, so called in honour of its illustrious discoverer, we shall describe hereafter. We may here remark that the identity between common and voltaic electricity is now susceptible of demonstration. These two electricities are excited under different conditions, and they act in different manners. The effects of common electricity are produced by the accumulation of small quantities of the fluid brought into an insulated state, and exerting a high intensity, as shown by its attractive and repulsive forces, and its mechanical action upon non-conducting substances, whereas voltaic electricity may be developed in large quantity, but it cannot be accumulated so as to attain a high degree of tension, and its effects are produced while it flows in a continuous current along conductors, or on a substance placed between two conductors.

If for example we charge a Leyden jar, and then discharge it by means of the discharging rod, the intensity of the discharge will depend upon the extent to which the electricity has accumulated on the interior of the jar, and this again depends upon the time which it has been in connection with the prime conductor of the electrical machine in action; that is, supposing we do not in any case give the jar its full charge. The quantities of electricity sent into it may be indicated by an electrometer attached to the top of the jar. On discharging the jar there will be an explosion, and equilibrium will be immediately established. This, however, is by no means the case with voltaic electricity: there is no accumulation, and, consequently, no discharge: the fluid passes along in currents, and exerts its peculiar action when those currents are interrupted by the interposition of bad conductors.

Voltaic currents are simple and compound. In the former case they exist in their most elementary form, and the latter are produced by a series of simple currents or circles acting in mutual connection.

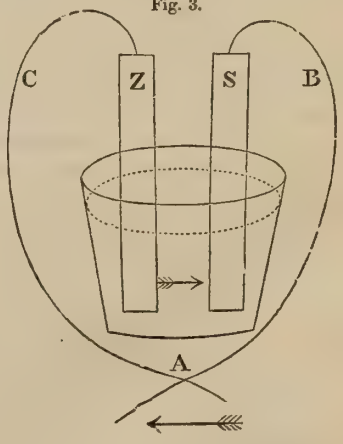
A simple voltaic circle may be formed by immersing two different metals in a dilute acid, and making them communicate by contact at the top, as in the figure, or by attaching wires to the upper ends, and placing the wires in contact. Of the two metals one should be easily acted on by the acid, and the other with greater difficulty or not at all. The greater the dissimilarity in this respect, the more energetic will be the resulting electrical effects. In the figure, z represents a plate of zinc, and s is one of silver, partly immersed in very dilute sulphuric acid, and in contact at their upper ends: by such arrangement a current of electricity appears to be put in motion, passing from the zinc to the acid, from the acid to the silver, and from the silver again to the zinc, as shown by the direction of the arrows.

Fig. 2.



If the metals are connected by means of wires, as shown in fig. 3, the circuit may be extended, and by

Fig. 3.



prolonging the wires it may be made to travel many miles. In this case the direction of the current is from the zinc z through the liquid to the silver s, down the wire B; from the latter to the wire C, and so back to the zinc plate. The advantage of this arrangement over the

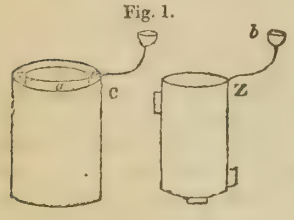
one before described is, that the current can be intercepted and operated with by placing a substance at A, and *closing** the current upon it.

In the foregoing arrangements the wire B, attached to the silver plate, conveys electricity to the wire C, attached to the zinc plate: B, therefore, is called the *positive pole*, because the electric current flows in a continual circuit, passing from the zinc to the acid, from the acid to the silver, and along the wires back to the zinc, so that we may suppose the wire B to be continually imparting electricity to the wire C: hence, the latter is the *negative* pole, and, according to the theory of the two fluids, a current of negative electricity ought to set in, in an opposite direction: but it will be convenient for us hereafter to trace the progress of the + or positive current only, not forgetting, however, that the transfer of any quantity of + electricity in one direction implies the transfer of a similar quantity of — or negative electricity in an opposite direction.

The simple voltaic circle last described may be conveniently modified by interposing a piece of flannel, dipped in dilute acid, between a plate of copper and one of zinc, instead of immersing the metals in the acid solution; or the copper may be shaped into the form of a vessel for containing the acid, and the zinc plate may be suspended in it, care being taken to support the latter by means of cork, to prevent the two metals from coming in contact.

There is also another useful modification of the simple circle. C is a vessel formed of two cylinders of sheet copper, placed one within the other, and closed at the bottom. Z is a cylinder of zinc, with a few pieces of cork attached, to prevent it from touching the interior sides, *a a a*, of the copper vessel, when it is placed between them. *b b* are small copper cups soldered on to conducting wires, and containing a little mercury, for the purpose of conveniently making the circuit, by the insertion of wires into the cups, or breaking it by removing them. The zinc cylinder being placed between the copper cylinders, and dilute acid being poured in, a simple galvanic circle is formed the moment metallic connection is made between the two little cups.

Fig. 1.



We have hitherto supposed that the zinc employed in these experiments is used in a pure state. Such, however, is not the case in practice, nor is it necessary to be so. The zinc usually employed in the construction of galvanic apparatus contains traces of tin, lead, and a small portion of iron. On immersing a piece of zinc in dilute acid, the small particles of iron and the zinc form numerous voltaic circles, their currents are transmitted through the acid, and much hydrogen gas is generated by the decomposition of the water. Pure zinc is very slowly acted on by dilute acid. If, however, common zinc have its surface amalgamated by dipping it into dilute nitric acid, and then rubbing a globule of mercury over it, by means of a cork, the zinc thus prepared resists the action of dilute acid as well as the purest zinc; and the advantage gained is that the apparatus is less slowly corroded—the minute curren s are not established, and thus the general results of the principal current are more effective.

We have hitherto spoken of the current formed by the action of two dissimilar metals and a liquid acid, but it is not necessary that the liquid be acid; it may be alkaline—it may be neutral—or it may be pure water only; but in the last case the electric current is so feeble as not to be detected by ordinary tests. In every case, however, the current gives an additional effect to the affinity of one of the metals for some element in the liquid employed, and the affinity of the other metal for any one of the elements in the liquid is proportionally diminished. When a piece of zinc and another of copper are brought into contact in dilute acid, the zinc oxidizes more and the copper less rapidly than without such contact. This principle was applied by Sir Humphry Davy to the preservation of the copper sheathing of ships. If a sheet of copper be immersed in sea-water, or in a solution of common salt, it becomes rapidly corroded, and an oxy-chloride of copper is generated. The vessel containing the copper and the solution must be exposed to the air, of which a notable quantity is always taken up by water exposed to it. In this case, therefore, the oxygen of the air so absorbed by the water, unites with a portion of the copper, and with the sodium of the salt; the latter, being composed of sodium and chlorine, gives chlorine to another portion of the copper, and the oxide and chloride of copper thus formed combine. But if the copper be in contact with zinc, or some metal more readily oxidizable than copper, it is alone acted on, and the copper is preserved. In this way the copper sheathing of ships may be preserved, and the quantity of zinc necessary to form a preservative voltaic circle with the copper is exceedingly small. A piece of zinc no larger than the head of a small round nail is sufficient to preserve between forty and fifty square inches of copper, the surface of which remains quite bright, while the zinc only is corroded.

When, however, the copper is thus rendered an electro-negative body it becomes attractive of metals and their oxides and other compounds, which, as respects the protected copper, are electro-positive bodies: among such are the earthy bodies contained in sea-water, such as lime, magnesia, and their compounds: when, therefore, a ship covered with protective copper was put to sea, the copper was soon covered with a crust of earthy matter, which acted as an additional preservative, but gave rise to a new and unforeseen difficulty: sea-weeds and a variety of marine animals attached themselves so abundantly to the ship's bottom as to impede the sailing of the vessel, and thus this beautiful application of galvanic science was necessarily abandoned.

* A current is said to be *closed* when metallic contact between the plates or conducting wires is made; and the current is said to be *broken* when such is not the case.

THE false modesty of the insignificance of such a being as man has always encouraged modern unbelievers to call in question the moral government of God. To this topic the Duke of Marlborough (who, without doubt, had often heard it urged in the licentious court in which he had been brought up), evidently alludes, when he says to the Duchess, in his letter of August 26, 1709,—"I cannot help being of opinion, that, *however insignificant we may be*, there is a Power above that puts a period to our happiness or unhappiness. If anybody had told me, eight years ago, that, after such success, and after you had been a faithful servant twenty-seven years,—that ever in the queen's life-time we should be obliged to seek happiness in a retired life, I could not have believed that possible."—WARBURTON.

BY continual meditation in the sacred writings, a man as naturally improves and advances in holiness, as a tree thrives and flourishes in a kindly and well-watered soil. All the fruits of righteousness show themselves at their proper season as opportunity calls for them; and his words, which are to his actions what the leaves are to the fruit, fall not to the ground, but are profitable as well as ornamental. Everything in him and about him serves the purpose for which it was intended; his brethren are benefited by him, and his Maker is glorified. How eminently is this the case with that tree of life which Jehovah planted in the midst of his new paradise, by the waters of comfort; a tree which sprung out of the earth, but its height reached to heaven, and its breadth to the ends of the world! its shadow is for the protection, its fruit for the support, and its leaves for the healing of the nations. It flourishes in immortal youth, and blooms for ever in unfading beauty.—BISHOP HORNE.

PROPOSED ROUTE TO THE PACIFIC ACROSS THE ISTHMUS OF PANAMA.

In various parts of the globe we find narrow necks of land which, by separating oceans, seas, or bays from each other, render necessary a more circuitous route for those who travel by ship from one to the other. The well-known isthmus of Suez affords a striking example of this kind. The Red Sea, which is connected with the ocean immediately contiguous to India, is so near the eastern end of the Mediterranean that if a canal or strait communicated from one to the other, the voyage to India would be shortened many thousand miles, by rendering unnecessary the circuitous route round the Cape of Good Hope. So important is this consideration, that even now the officers of the Indian army are accustomed to travel by land across the narrow isthmus which separates the two seas, and we doubt not that a canal or a railroad will one day be formed in that spot.

Another instance of a similar kind, but not so well known, is the isthmus which connects North and South America, and which separates the Atlantic from the Pacific; this is the Isthmus of Panama, or of Darien. As there are, at the present time, projects on foot for establishing a route to the Pacific *viâ* this isthmus, we will briefly explain the nature of the difficulties to be overcome.

On inspecting a map of America, we see that the two portions of that great continent are connected by a singular strip of land, most irregular in all its forms. It is principally comprised by a part of Mexico and the Republic of Guatemala; but, at its southern extremity, near the junction with South America, the strip of land becomes narrower than at any other part, and obtains the name of the Isthmus of Panama, or of Darien, (Panama being the name of a town on the Pacific side, and Darien that of another on the Atlantic side.) The Andes, generally speaking, stretch along the whole strip of land; but there are a few spots where such is not the case; and there is also one locality in which a lake occupies a considerable portion of the width of the isthmus. These two circumstances have led to the projects which we proceed to describe.

Humboldt enters at considerable length into the subject of a passage across the isthmus, and enumerates no fewer than nine different routes, all of which might be *possible* for a canal: the gigantic nature of his plans, however, caused them to be viewed as impracticable. By about the year 1825, the attention of merchants, both in England and in America, being turned to this subject, Captain Pitman published a volume, in which he examines the relative merits of five different routes across the isthmus. One of these was from the Gulf of Darien, close to the shore of South America, across a narrow part of the isthmus, to the Gulf of St. Michael, in the Pacific coast; this would require a ship canal about forty miles in length, and cutting through the hills so stupendous as to render improbable, however possible, the prosecution of such a plan. The second route mentioned by Captain Pitman is somewhat westward of the former; the ground has fewer elevations than the former, but the ports at either end of the route were deemed so defective as to be unfit for the reception of large merchant ships. The third route proposed was at a spot, close to the southern end of the isthmus, where the chain of the Andes is so completely broken as to afford a flat alluvial soil, from a river which flows into the Atlantic, to another which flows into the Pacific; it was proposed to connect these two rivers by a canal, but the rivers themselves are said to be too small and shallow to receive any but small craft. The fourth route was some hundreds of miles to the north-west, where the width of the isthmus was practically lessened by the intervention of a lake. The fifth route was in the state of Mexico, at that part of the isthmus which approaches to North America; the width here, at one part, is about a hundred and fifty miles, a considerable portion of which is occupied by two rivers, which it was proposed to connect by a canal. The object of Captain Pitman was to examine the relative practicability of the several proposed routes, and to point out some of the difficulties, but not to advocate any one in particular.

In November, 1827, Mr. Lloyd, an officer under Bolivar, (who was then chief of the Republic to which the Isthmus of Panama belonged,) received instructions to survey the isthmus, in order to ascertain the most eligible line of communication across it, either by road or canal, with a view to establish regular commercial intercourse from the Atlantic to the Pacific. Mr. Lloyd made a very careful examination of the height of the ground between the two seas, and also of the level of the seas themselves, both of which are obviously important in relation to the cutting of a canal. He found that the highest spot of ground, in that route, which was deemed the most level, was 633 feet above the Pacific. He found also that the level of the two oceans was subject to singular changes; for, in every twelve hours, and commencing with high tides, the level of the Pacific is first several feet higher than that of the Atlantic; it becomes then of the same height; at low tide it is several feet lower; again, as the tide rises, the two seas become of one height; and finally, at high tide, the Pacific is again the same number of feet above the Atlantic as at first. These variations are due to the circumstance that the rise and fall of the tide are greater on the Pacific than on the Atlantic side of the Isthmus. What effect this inequality would have on a water communication from the one ocean to the other is an important question in canal engineering.

Mr. Lloyd was of opinion that a communication could be formed across the isthmus, partly by river navigation, and partly by railroad. There is on the Atlantic side a sea-port, called Chagres, and another on the Pacific side, called Panama, and the country between them is so entirely free from mountains that the greatest height is, as before mentioned, 633 feet. A river, which enters the Atlantic at Chagres, is navigable to a considerable extent into the isthmus; and Mr. Lloyd proposed to construct a harbour and other maritime conveniences near its mouth. At a certain point in the interior a station was fixed upon at which the travellers or the merchandize would leave the river, and thence be forwarded by land the remainder of the distance to Panama, a railroad being formed for that purpose.

It need hardly be observed that such a project as this could not be carried out unless the government of the country were in a tolerably settled state, and considerable capital were afloat therein. How totally different from this has been the condition of these wretched republics of Central and South America, is well known to those who have paid any attention to the events of the past fifteen years. Nothing has since been done to follow out the plans of Mr. Lloyd.

A few years after the mission of Mr. Lloyd, a circumstance occurred to direct attention to another part of the isthmus, which, though not so narrow as that between Chagres and Panama, has a central lake, and a river flowing from thence into the Atlantic. In the month of January, 1833, the Spanish merchants residing at Kingston, Jamaica, and connected with the commerce of Central America, requested the senior naval officer at Port Royal to allow a certain extension of the voyage made by the mail-packets in that region, with a view of establishing a communication, by commerce and correspondence, with the towns near and around the lake here alluded to, called Lake Nicaragua. The river San Juan de Nicaragua flows from the lake into the Atlantic; and the Jamaica merchants thought that, if a monthly communication were kept up between Jamaica and the town

of San Juan at the mouth of the river, a great accession of commercial dealings would result.

Captain Phillips, who communicated a letter to the Geographical Society of London in relation to this subject, draws a comparison between the route to the Pacific by the way of Panama, and that by way of Lake Nicaragua, and says,—

The passage by Panama leads alone to the Pacific, whilst the passage by San Juan de Nicaragua would affect the whole of the internal commerce of Costa Rica and Central America, and most likely be not only the means of a commercial transit to the South Seas, but, from the influx of strangers, and the interchange of ideas naturally arising from it, would tend to enlighten this district of the country, which civil war, with all its horrors, is fast driving to the lowest stage of ignorance and barbarism.

We fully join in the opinion that, if a commercial route could be established in any part of this isthmus, an amount of moral benefit might result, fully equal in extent to that which would be derived by commerce.

The Lake Nicaragua, which is proposed to form part of the route last spoken of, is upwards of a hundred and twenty miles in length, and forty in breadth at its widest part, without narrowing much at either end. It is interspersed with islands, some of which are of great height. On this inland sea the Spaniards, when Central America belonged to them, kept a marine, consisting of a brig of war, of fourteen guns, and several schooners, or gunboats, so that its fitness for navigation is manifest. An English merchant had, nine years ago, a schooner of forty tons' burden, engaged in commercial enterprises on the lake. On the shores of the lake are two flourishing towns, Grenada and Nicaragua, the latter being only fourteen leagues' distance from a convenient port on the Pacific. Hence arose the idea of forming the communication by this route; for the lake can be attained through the river, which flows from it into the Atlantic, and the rest of the journey, fourteen leagues to the Pacific, would have to be traversed by road, railway, or canal, according to the nature of the ground and the views of the speculators.

After it became evident to the merchants who traded in those regions that the proposed communication might be made, the points for discussion were, whether a canal or a railway would be best adapted for the portion of the route between the lake and the Pacific, and by whom and what funds the enterprise should be undertaken? If the government of the Republic could not or would not effect it, then a private company, sanctioned by the government, must do it. Both of these questions remain unsettled to this day. A few years ago, Mr. Bailey, having ascertained the possibility of constructing a railroad from the lake to the Pacific, the Columbian government granted him two thousand dollars for the purpose of making investigations respecting the other part of the route. The river San Juan flowing from the lake into the Atlantic, cannot at all times be ascended by ships, on account of rapids and shallows which interrupt some parts of its course, and Mr. Bailey was empowered to examine the river, with a view to ascertain the practicability of constructing a canal which would avoid these obstructions. But long before the completion of the investigation, the money was expended, the engineer and his assistants were disabled by sickness, and the anarchy in which the country was placed put an end to any further aid from the government.

In the month of March, 1840, while H. M. S. *Thunder* was engaged in the survey of the eastern coast of Central America, Mr. Laurence, an assistant surveyor, with a crew of six native canoe-men, voyaged up the river San Juan, from its mouth to the lake, in a canoe. The results of that voyage, as far as regards the nature of the surrounding country, were interesting, but it was fully proved that no ship or steamboat could ascend the whole course of the river from the sea, except under extraordinary circumstances of wind and tide. Captain Barnett, of the ship *Thunder*, in a paragraph in the *Nautical Magazine*, states,—

Mr. Bailey is said to have been employed by a company of American speculators. This, however, is not the fact, although the merchants concerned in the South Sea fishery are extremely anxious to effect a communication; but nothing will be undertaken by them unless they are convinced it can be accomplished by the way pointed out in Mr. Bailey's mission, which, by affording the means of rapid transport of the cargoes and supplies, would enable the whalers to remain entirely in the Pacific. Of course the spur which would be also given to the commerce of Central America is not lost sight of, but the anarchy, confusion, and distrust which now so ruinously degrades this disruptured Republic, throws the prospect of such desirable results to an immeasurable distance.

The opinions here expressed, as to the fatal effects which national anarchy exerts in the prosecution of such an enterprise, is shared by others who have since visited the country. The Chevalier Emanuel Friedrichsthat, who has recently traversed the district bordering on the isthmus, found the civilization of Central America to be in a very low state of developement. Indolence is there the vice of all classes; and though public spirit is not absolutely wanting, yet those who are animated by it have neither the union nor the energy requisite to enable them to cope with the disturbers, by whom the country is kept in a state of anarchy. A territory of 28,000 square leagues is there possessed by only 2,000,000 of inhabitants; and this scanty number has decreased rather than increased during the discord and confusion of the last sixteen years.

Under such circumstances, (says M. Friedrichsthat,) the important question of a union of the two oceans has been entirely forgotten; and I believe that I do not err in asserting that Europe pays far more attention to this grand project than the inhabitants of Central America, wholly unacquainted as they are with the advantages of an extensive commerce, and with the means of promoting it. It is also not to be expected that this state, with its limited resources, should ever be able to accomplish such a work; and it was therefore proposed, before the last war, to engage some mercantile houses of Paris in the execution of this project, the recompense consisting of tolls and fifty square acres of land.

A point has been found where the Lake Nicaragua approaches within sixteen miles of the Pacific, but a hill, six hundred feet high, would have to be cut through in forming the passage; and it is evident that M. Friedrichsthat's remarks apply with full force to the commercial and financial difficulties of such a piece of engineering in the present state of the country.

Not many weeks ago a meeting was held of merchants in London, connected with the South Sea trade, with a view of establishing a Joint Stock Company, for working out the plan in one or other of its forms. Opinions were stated as to the relative advantages of a railway and a canal, and the general feeling seemed to be that the project was neither a wild nor an impracticable one. A few years of tranquillity in Central America would doubtless bring about the fulfilment of this great undertaking.

IN all the operations of Nature there is a view to the future: it should be so with the actions of man; and those pursuits which have no other aim beyond mere present gratification, are unworthy of him.—SOUTHEY.

IN your commerce with the great, if you would have it turn to your advantage, you should endeavour, if the person be of great abilities, to make him satisfied with *you;* if he be of none, to make him satisfied with *himself*.—WARBURTON.

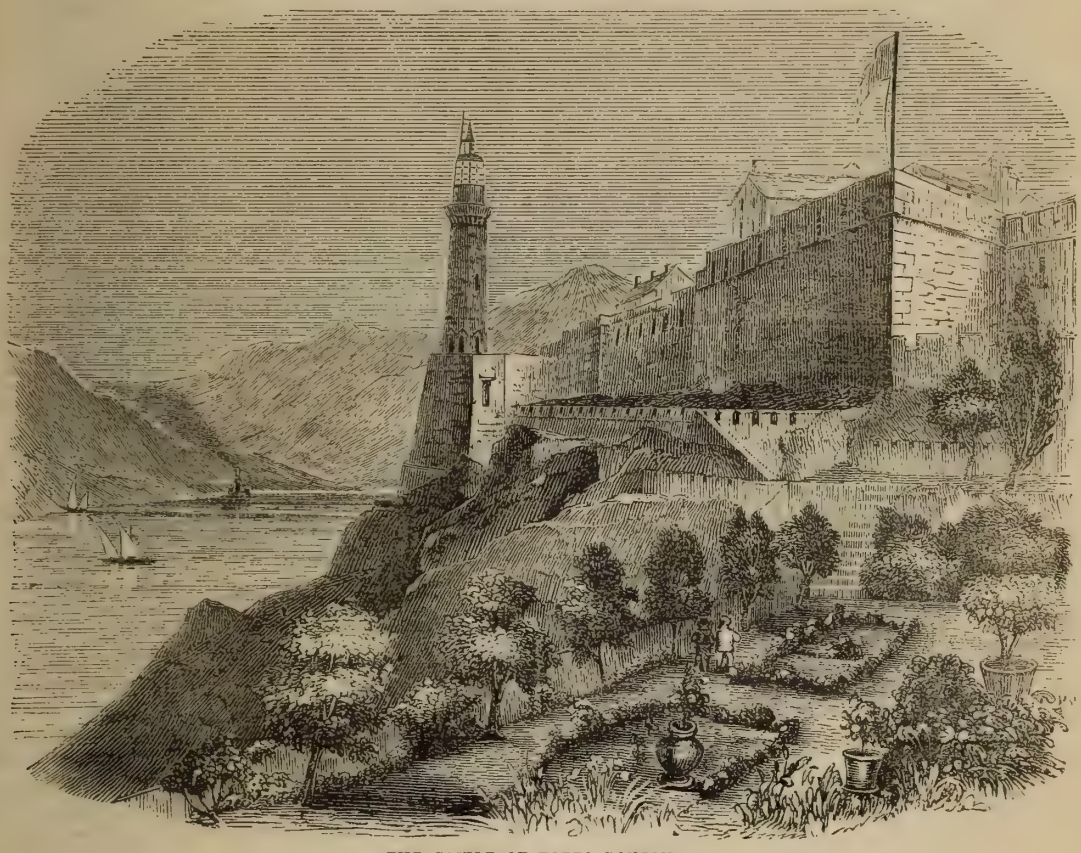
LONDON:
JOHN WILLIAM PARKER, WEST STRAND.
PUBLISHED IN WEEKLY NUMBERS, PRICE ONE PENNY, AND IN MONTHLY PARTS, PRICE SIXPENCE.
Sold by all Booksellers and Newsvenders in the Kingdom.

THE

Saturday Magazine.

Nº 639. JUNE 18TH, 1842. { PRICE ONE PENNY.

THE ISLAND OF ELBA.



THE CASTLE OF PORTO LONGONE.

ELBA, the Ilna or Ilva of the Etruscans and Romans, and called Æthalia by Strabo, is an island in the Mediterranean sea, near the coast of Tuscany, and separated from it by the narrow channel of Piombino. Its shape is very irregular; its length is about eighteen miles, and its greatest breadth, which is on its east side, is about ten miles; in its west part it is six miles broad, and towards the middle of its length it is only three, in consequence of the coast being indented by gulfs both from the north and south. The prevailing rocks seem to be granite, claystone, and limestone passing into marble; but near the coast, being continually triturated and battered by the winds, and by currents, and surges of a sea often tempestuous, the shores present numerous sharp angles, encroaching upon the land, or jutting out into the water, of which the number and shape vary continually.

The area of the island is about 154 square miles: it is very mountainous; the highest summit, Monte della Capanna, in the west, is 3600 feet above the level of the sea.

In ancient times Elba seems to have been populous. Virgil, in the *Æneid*, states that it contributed 300 chosen soldiers to Æneas, in his wars with Turnus. Silius Italicus states that, after the unfortunate day of Trebia, it sent (the same number with Sicily) 3000 excellent archers, armed and equipped, and a vast quantity of arms, to the Roman consuls.

In the year 1778, the number of inhabitants scarcely amounted to 8000: in 1808 it was nearly 12,000, and it is now estimated at about 13,500, of which Porto Ferrajo, the capital, has about 3000. Porto Ferrajo lies on the north coast of the island: it has an excellent harbour, and is strongly fortified with two citadels on the hill above it, between which is the palace formerly inhabited by Napoleon. It is a plain house, of two stories, with wings. It commands, towards the south, a fine view of the town, harbour, and mountains; and, in the north of Piombino, the coast of Italy, as far as the mountains of Lucca, and the islands to the west. Not a boat can stir without being observed. The whole of this ridge, which is a rocky promontory or peninsula, projecting into the bay, is quite destitute of foliage. The rock, the houses, the bastions, and the flanking walls of the fortifications, being all white, are distressing to the eyes; and the heat in summer would be almost insupportable, did not the sea-breeze temper and freshen the air. The town has two parish churches, one hospital, and a lazaretto. A good road, five miles in length, made by Napoleon, leads from this town to Porto Longone, on the east coast, on a deep bay, where there is good anchorage for vessels. The castle of Porto Longone is on a steep hill, and is regularly fortified. The town is small, and numbers about 1000 inhabitants. The other principal towns or villages in the island are Rio, Marciana, Campo, and Capo Liveri.

The Elboise are attached to their native soil, and by choice, as well as by necessity, lead a life of labour. Like the early Romans, they pass with equal pleasure and eagerness from the cultivation of the earth to the toils of the camp. They have often repulsed the barbarians, who sought to invade their country or reap their harvests. Every man is born a seaman, and the inability to row and navigate a boat is thought disgraceful: they are passionately addicted to the chase, and are fond of all manly exercises. Their hair is generally black, the complexion brown, the countenance lively, and the eye penetrating. A hat of black straw, a white boddice, a short petticoat of red or blue, form the whole attire of the women;—a flower, a ribbon, a huge ring, large earrings, a gold chain (in which the precious metal is almost lost in alloy), are holiday additions to the usual dress. They are good mothers, entirely devoted to their families, and punctual and faithful in the discharge of all their duties.

The food of the Elboise accords with the simplicity of their habits. Their cheese, procured from ewes' milk, is of a bad taste and smell, but the curds are delicious, and form a principal item in their food. They have also good bacon, salted and smoked provisions, coarse bread, fresh fish, chiefly the tunny, and very few vegetables. They eat vast numbers of chestnuts, of which the crop is gathered towards the end of October: they are dried by the fire till the double rind peels off, then ground in a corn-mill with the upper grindstone raised to accommodate their bulk: the flour produced is not mixed with bran; it is soft, saccharine, and of a yellowish-gray colour, approaching nearer to white in proportion as the chestnuts have been carefully picked and dried. The flour thus formed combines and hardens when squeezed together. To preserve it it must be kept in a dry place, compressed with considerable force, and covered to a depth of two or three inches with ashes or sand. The Elboise make from it polenta and pastry, far superior to any that can be procured from maize.

They are very sparing in their food: they breakfast on polenta: at noon they dine off bread, beans, lentils, or other species of pulse, boiled and seasoned with oil; their evening meal consists of soup and fish. On holidays only do they allow themselves the luxury of fresh meat, and a white wine, carefully made, and of excellent quality.

Their houses are of small elevation, but the interior is neat, the furniture simple and solid. The kitchen utensils are all formed of baked earth, imported from Naples and Tuscany. Their beds are remarkable for their enormous size, each one being sufficient for the repose of a whole family of eight, ten, or twelve persons.

Dancing is one of their favourite amusements, but it is said to want that expression of sentiment, that vivacity of movement, and variety of attitude, so pleasingly shown by the peasantry of Rome, Naples, Tarentum, and Calabria. Even in the time of harvest there is little gaiety; the corn is thrashed out under a burning sun, and in the evening there is not heard, as on the plains of Tuscany, the violin or the mandoline, announcing that the toils of the day are at an end, and that every heart is happy: the pleasures of the table do not here cause the neighbourhood to resound with the joyous shouts of the labourer. The period of the vintage is the carnival of the cultivators of the vine: mirth is then most obstreporous, and, while the grapes are gathered, echo is taught to repeat the loud notes of musical instruments.

The Elboise language is a patois, of which the radical words are in the Tuscan dialect: it is easy of pronunciation and by no means disagreeable. The amusement in which the people take greatest delight is that of the improvisatore, or recitations in verse upon any given subject, on days of festivity. In common with the improvisatore songs of Italy, an attentive observer may recognise entire passages from Tasso, Ariosto, Metastasio, &c., which the extemporaneous poet has adroitly adapted to his own subject.

From the naked mountainous character of the island there is but little arable or pasture land; but the lower ridges, the valleys, and little plains are planted with the vine, olive, mulberry, and other fruit-trees. the island also produces some wheat and maize, vegetables and water-melons. There is a sad deficiency of timber: from the practice of burning for pasture, the wood and shrub upon the hills are in general small, except where the cork-tree abounds. The rest consists of ever-green oak, arbutus, myrtle, and heath. Aromatic herbs and plants occur in great profusion, and the inhabitants use them daily in their kitchens; everywhere the air is perfumed with their sweet scents, and the eye delighted by the variety of their flowers. Few places would be found more favourable for keeping bees, but the Elboise do not seem to be aware of the advantages likely to arise therefrom.

The pastures being so scanty, horned cattle is of course scarce, but there are plenty of sheep, goats, pigs, and asses. Wild cats are occasionally met with, and their history is curious. About the middle of the seventeenth century the island was so overrun with rabbits that the farmer every year saw his fields laid waste, and his hopes destroyed. To put a stop to their ravages a great number of cats in kitten were turned out into the districts which were most infested. They pursued the rabbits into their very burrows, in a few years reduced their numbers, and have ever since kept them in check.

The iron ore of Elba is particularly rich. It is found in a mountain near Rio on the east coast, and consists almost entirely of one mass of ore, about two miles in circumference, and 500 feet in height. About 200 miners are employed in it, and the ore yields from 50 to 75 per cent. of pure metal; but, owing to the scarcity of fuel, the ore is embarked and taken to the mainland to be smelted, as it was when Strabo wrote. Sixty carriers with 100 asses are employed in conveying the ore from the mines to the shores, where it is embarked in boats of from 5 to 30 tons. For a period of ten years, *i.e.*, from 1825 to 1834, the quantity of ore produced annually was 1600 centi. The cento is an ancient measure still used in the island, consisting of 33,333⅓ Tuscan lbs., or 25,000 English lbs. Of this quantity 700 centi are consumed in Tuscany, and the rest sold for exportation, principally to Genoa, Rome, Naples, and Corsica.

The other mineral productions of Elba are loadstone, alum, vitriol, and various kinds of marble. The salt-pans on the sea-shore produce annually about 50,000 cwts. of salt.

We will conclude this notice with a brief sketch of the history of the island. Elba is supposed to have been first peopled by a colony of Etruscans, and afterwards occupied by a body of Greeks, who founded Marseilles. It subsequently fell under the dominion of Carthage, and was taken by the Romans during the first Punic War. In the second Punic War Elba supplied iron for naval and military purposes, and was considered as one of the states which had saved the republic. In the contest between Sylla and Marius the adherents of the latter fled thither for refuge, and Elba became thus involved in proscription and devastation, from the effects of which it never recovered under Roman dominion. In modern times it became attached to the commercial republic of Pisa; under the auspices of which it attained a comparatively flourishing condition. On the annexation of Pisa to Milan, Elba, with Pianosa, Monte Cristo, Piombino, and other territories, was formed into a little principality, which continued for about two centuries in the hands of Gherando d'Assiano and his successors, though repeatedly occupied as a military station by Charles V. and his ally the Grand Duke of Tuscany. Being thus involved in the wars of that monarch with the Porte and the Barbary States, Elba became exposed to the incur-

sions of the Turkish corsairs. It was laid waste with fire and sword once by Barbarossa, and twice by Dragut, and it was long ere it recovered from these ravages. Under Philip III. it fell into the possession of Spain, and that prince ordered the construction of Porto Longo, which proved a barrier against the incursions of the corsairs. Several transferences afterwards took place, the result of which was that, after 1735, the King of Naples had possession of Porto Longone, and the Grand Duke of Tuscany of Porto Ferrajo. Elba continued in this state till the French Revolution, when it first became part of the kingdom of Etruria, and was then annexed to France.

In modern times Elba has become an object of great interest in consequence of its having been the residence of an individual who had been unceasingly present to the hopes and fears of almost every man in Europe during by far the most eventful period of its history. On the first abdication of Napoleon in April, 1814, the Emperor Alexander proposed that he should retain the title of Emperor, with the sovereignty of the island of Elba, and a revenue of six millions of francs, to be paid by France. This was agreed to by Prussia, Austria, and afterwards by England. On the 20th of April Napoleon left Fontainbleau, and proceeded to Frejus, where he embarked on board the British frigate, the Undaunted, and on the 4th of May landed at Porto Ferrajo. He was at first extremely unpopular. The visitations of the French had left lasting memorials among the suffering inhabitants, but his tact and liberality soon produced a change. In less than three weeks he had explored every corner of the island, and projected more improvements of all sorts than would have occupied a long life to complete. He even extended his empire by sending some dozen or two of his soldiers to take possession of a small adjacent islet, hitherto left unoccupied for fear of corsairs. He established four different residences at different corners of his little island, and was continually in motion from one to another of them. Alterations and improvements went on everywhere: in a few weeks a building was erected for the evening's amusement of the Elboise; a spacious barrack constructed; an easy carriage-road was made into the town by the best level towards the opposite extremities of the island, and others were levelled. Five thousand men were constantly employed, at six pauls, or about three shillings, a day, in these various undertakings, and the peasants witnessed suddenly the effects of improvements which till then they had scarcely imagined. His presence gave a new stimulus to the trade and industry of the islanders; the port of Ferrajo was crowded with vessels from the opposite coasts of Italy; and such was still the power of his name, that the new flag of Elba (covered with Napoleon's *bees*) traversed with impunity those seas most infested with the Moorish pirates.

For some time Napoleon seemed reconciled to his lot, but after a few months he became more reserved and gloomy, and was frequently absent and lost in thought: he was in fact engaged in secret correspondence with his friends in France and Italy; a wide conspiracy was formed, and on the 26th of February, 1815, he embarked, with about 1000 men of his old guards who had followed him to Elba, and landed on the 1st of March at Cannes. It does not belong to our subject to follow him further. On the second downfall of Napoleon, Elba was ceded to the Grand Duke of Tuscany.

The princess, afterwards Queen Elizabeth, on sending her portrait to her half-brother King Edward the Sixth observed, —"For the face, I grant, I might well blush to offer; but the mind, I shall never be ashamed to present. For though from the grace of the picture the colours may fade by time, may give by weather, may be spotted by chance, yet the other, nor time with her swift wings shall overtake, nor the misty clouds with their lowerings may darken, nor chance with her slippery foot may overthrow."

ON SPRINGS, WELLS, AND FOUNTAINS.

II.

In our former article on this subject we offered to the notice of the reader a few details on springs and fountains, and stated that the ancient Romans seemed to be well aware of the principle upon which artificial fountains are produced. The accompanying cut represents a fountain discovered during the excavations at Pompeii, at the east end of the court of the Fullonica. Sir William Gell speaks of it as "one of the prettiest things of the kind yet discovered, and showing that the ancients had the art of constructing fountains in jets as we now possess it." We now propose to speak of wells, respecting which there are many curious details worthy of notice.

Mr. Mylne, the engineer of the New River Company, communicated many of the results of his experience to the Institute of Civil Engineers, in whose *Transactions* they were published a few years ago.

In this paper it is mentioned, that a well, which was formerly dry, at Coutts's banking-house, afterwards yielded so plentifully that the water flowed over the top of the well, and thence found its way to the Thames; but other wells having been sunk in the neighbourhood this one is so influenced that the level of the water does not now rise higher than low-water mark. A well at Norland House, Kensington, which at one time flowed over, is now sunk several feet, from a similar cause. Other wells, situated at Tottenham, Tooting, Mitcham, and Hanwell, have all been affected in a similar manner, and from similar causes. Barclay's brewery, being situated in Southwark, near the south bank of the river, and Calvert's brewery, being situated in Thames-street, near the north bank, it is found that when Barclay's pump is worked, the level of the water at Calvert's pump is perceptibly affected, thus proving the singular fact that the watery stratum passes under the Thames, just as it would do under dry land, without seeming to be in connexion with the Thames water. Other breweries, at which a large quantity of water is required, are affected by similar inconveniences. In a well at Whitbread's, in Chiswell-street, the supply of water was found to be so affected by the sinking of other wells in the neighbourhood, that it had to be deepened to a very great extent. At Combe and Delafield's, in Castle-street, Long Acre, the well having been affected by similar causes, it was deepened, and by so doing, a well at some saw mills, in St. Martin's-lane, was rendered almost useless. A well, sunk at the New River Company's reservoir, in the Hampstead-road, has been found to be sensibly affected whenever the well at the Zoological Gardens, in the Regent's Park, is being worked. Numerous similar instances have been adduced, all pointing clearly to the fact that the water stratum, beneath the clay, is continuous to a great extent.

Another inconvenience alluded to results from the removal of the sand along with the water. The underlying sand is of so fine a nature that it will pass through very minute apertures, and is easily put in motion, whence it follows that the sand is drawn up in considerable quantities with the water, often tending to choke the pipe through which it ascends, and to cut the pump-barrels, by reason of the sharpness of the granules. The most serious effect, however, is, that by the withdrawal of so large a quantity of sand, a vacant cavity is formed beneath the clay, which, being thus left partially unsupported, has a tendency to sink, and to endanger the buildings above. Among the instances of this kind adduced by Mr. Mylne, is that of a well at Messrs. Reid's brewery, Liquorpond-street, where the withdrawal of sand caused such a cavity to be produced that the working of the pump had to be stopped, to prevent danger to the buildings. Similar effects, varied in degree, are said to have occurred at the vinegar works in the City-road, and at three or four other large establishments in the Metropolis.

When these circumstances became known to engineers a subject of inquiry arose, how far the chalk beneath the clay was likely to furnish a supply of water. It is known that many fissures and hollows exist in the upper chalk formation; and if these be filled with water, which can be obtained by boring down through the chalk, one at least of the two inconveniences just mentioned would be obviated. On the existence of water in the London chalk basin, and on the probable mode in which it entered, Mr. Simpson thus remarks:—

From examples of wells bored and sunk in and near the Metropolis, particularly on the western side, viz, Hammersmith, Fulham, &c., the springs in the chalk formation are evidently more abundant, and in most instances rise much higher, than the springs from the sand stratum above it: nearly all the overflowing wells near London derive their supply from the chalk formation. The water in most cases is found at about seventy feet depth in it, sometimes in strata of loose flints, sometimes in fissures, and occasionally in soft veins in the chalk. Sufficient proof of this has been obtained by borings in and near the Metropolis, and by connecting the observations with the cases of wells actually sunk into the chalk immediately outside the London basin. The fact of the water rising to higher levels may be attributed to the more open structure of the formation compared with the sand strata; but it is more probably attributable to the sources from whence the supplies are derived being in more elevated situations; and there seems already sufficient evidence to connect a considerable portion, if not the whole, of the source of the supply, with the rivers and streams traversing the bassetts of the strata, where they crop out and intermingle with the chalk in the uplands near the Metropolis.

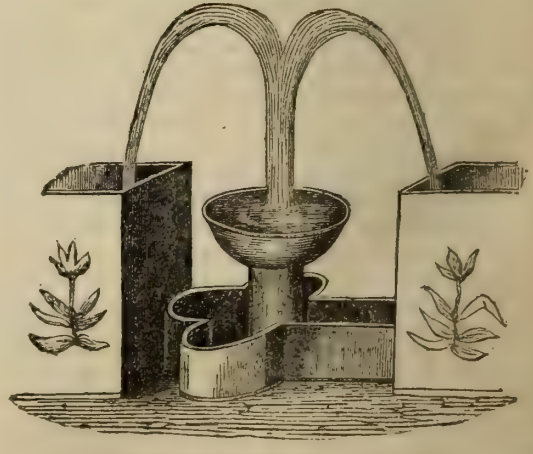
It is the opinion of this gentleman, that the custom of seeking for water in the chalk stratum, rather than in the strata superposed in it, will hereafter become very prevalent in the sinking or boring of wells.

The practical operations of the well-digger are attended with the most diversified results, showing that although certain broad principles may be detected, yet the operation of these in any particular spot can scarcely be predetermined. It is said that a well has been sunk near Wimbledon to a depth of more than five hundred feet without water being found. A well was bored near Bermondsey Church to a depth of eighty feet, when the boring instrument suddenly sank fifteen feet, as if into a cavity filled with water; after several tons of green mud were pumped up, the water rose in a clear state, and has since that been accustomed to rise and fall three feet with the tide, showing some connexion between it and the river. At the vitriol-works at Deptford, a boring of 210 feet caused the water to rise to within nine feet of the top. At the Excise-office in Broad Street, the water in a well 160 feet deep, rose no higher than within sixty feet of the top. The neighbourhood of Wandsworth seems particularly fortunate in the nature of its springs. Mr. Mylne says that at the copper-works at Wandsworth there is a large boring, from which the water rushes out to the height of about twenty feet above the ground; for convenience it has been confined by a bent tube, so as to deliver the water horizontally into a mill-head. Several others occur along the banks of the river Wandle, all delivering above the ground surface, and so plentifully that they give considerable power to the mills in that river. Mr. Phillips some years ago mentioned a curious circumstance respecting a well sunk at Epping. The well was first dug in the usual way to a depth of 200 feet, without reaching water. A boring was then commenced to an additional depth of 220 feet, until the sand beneath the clay was reached. No water appeared, and the mouth of the well was closed up; but when it was opened, five months afterwards, a supply of limpid and soft water was found to have risen in it to within twenty-six feet of the surface.

In these observations the reader may have remarked that we have sometimes spoken of *digging*, or *sinking* a well, and at other times of *boring* it. The difference between these operations requires a little explanation. A well, as we generally understand the term, is a cylindrical hole, dug in the earth, with a diameter of four or five feet, by means of pickaxes and shovels, and lined with brickwork, to prevent the earth from falling in. From the well thus made the water—if it does not reach the surface—is drawn by one of two methods, either by means of a bucket attached to a rope winding round a windlass at the top, or by means of a pump acting on the ordinary principles of suction or atmospheric pressure. But when the depth becomes very great before water is reached, or when the strata excavated are very hard, the process of digging becomes very laborious and costly. To obviate the necessity of digging under such circumstances, a plan has been devised for boring a hole only three or four inches in diameter, instead of making an excavation of several feet. A well so constructed is called an *artesian well*, from the province of Artois, in France, where the plan is said to have been first adopted*.

The locality having been chosen, the borers usually dig a pit, a few feet in diameter, to serve as the top of the well, and in the earthen floor of this pit they bore the well-hole. The boring-tools are chisels and augers of various shapes. A chisel, with a long cross handle, is first used to penetrate the ground; if the soil be soft, the weight of two men pressing on the handle, and occasionally turning it round, will be sufficient to make the chisel sink; but if the ground be hard, the progress of the chisel is urged by repeated blows at the upper end. When a hole is thus formed to a certain depth, the loose earth is removed by a kind of auger, furnished with a valve; and a regular process of boring then commences. The chisel is lengthened by an iron rod being inserted between it and the handle; and this lengthened chisel is worked until the hole is bored as far as the instrument will reach. The chisel is then taken out, and removed from the handle; a valved auger is fixed in its place, with which the loosened earth or stone is removed. The auger is next removed, another length of iron rod is added, the chisel attached as before, and the hole further bored to a depth equal to the additional length of the instrument. Thus the operations proceed, the excavating instrument being lengthened six or seven feet at a time, until a watery stratum is reached. Sometimes the workmen bore the full width of the hole at once, but at other times they use a small chisel first, and then expand the hole to four inches' diameter, by means of a larger instrument. A metallic pipe, a little smaller than the hole, is subsequently inserted in it, for a considerable portion of its depth, to prevent the hole being choked by the surrounding soil, and also to prevent the entrance of impure water, draining from the vegetable mould in its vicinity.

* See *Saturday Magazine*, Vol. XV. p. 190



FOUNTAIN OF THE PULLONICA AT POMPEII.

JAVANESE SKETCHES. III.

FIRE PHEASANT OF JAVA.

Sketch of the Natural Productions of Java.

Java is distinguished by the abundance and extraordinary variety of its vegetation. Between the tops of the mountains and the sea-shore, this island may be considered to possess at least "six distinct climates, each furnishing a copious indigenous botany, while the productions of every region in the world may find a congenial spot somewhere in the island."

There are upwards of a hundred varieties of rice, which is the staple grain of the country: it is cultivated on the slopes of mountains and the low fields, and gives a return of thirty, forty, or fifty fold. The bamboo, the cocoa-nut tree, the sugar cane, the cotton tree and the coffee plant flourish in the greatest luxuriance; while maize, or even wheat and rye, potatoes and the other plants of Europe, are cultivated to advantage on high and inland situations.

Nothing can be conceived more beautiful to the eye, or more gratifying to the imagination, than the prospect of the rich variety of hill and dale, of rich plantations and fruit-trees or forests, of natural streams and artificial currents, which presents itself to the eye in several of the eastern and middle provinces, at some distance from the coast. In some parts of Kedu, Banyumás, Semárang, Pasúman, and Mulang, it is difficult to say whether the admirer of landscape, or the cultivator of the ground, will be most gratified by the view. The whole country, as seen from mountains of considerable elevation, appears a rich, diversified, and well watered garden, animated with villages, interspersed with the most luxuriant fields, and covered with the freshest verdure.

A list of all the vegetable productions of Java would include the greater portion of those which grow within the tropics in general. Our attention must therefore be chiefly directed to the most remarkable treasures of this highly favoured region.

The mangústin, which on account of its acknowledged pre-eminence amongst Indian fruits, has been termed the pride of these countries; the durian, or duren, to which the natives of the Malayan islands are so passionately attached; the mango, the plantain, the guava, the pine-apple, the papaw, the custard-apple, the pomegranate, the tamarind, and almost every species of tropical fruit are here found in the greatest variety. Innumerable flowers bloom in perpetual succession throughout the year, and impregnate the air with their fragrance: many of them are used by the natives in the ornament of their persons. Many medicinal plants are constantly employed by the natives, a large proportion of which are unknown to Europeans.

From several varieties of palm the natives prepare ropes by pounding and beating the fibre obtained from the large stalks of the leaves. Thread, rope, cloth, &c., are also prepared from the fibrous bark of various kinds of vegetables. The fibrous substance is obtained by beating or macerating the bark, and is then twisted by the hands alone. But the cheapest ropes are made from the stem of a species of bambusa: this stem is split into thin strips, and twisted on the spot into cords fit for all common purposes, although they are serviceable only for a few days. They are constantly used in travelling for securing baggage, &c. Two plants, called widúri and rami, afford strong and durable cords, which are chiefly employed for nets or lines used in fishing. The separate fibres of the pine-apple are employed by the natives in sewing, without any preparation: these fibres are also made into a kind of stuff resembling silk, gauze, &c. Several kinds of grass are worked up into bags, sacks, mats, &c. Paper is manufactured from the *Morus papyrifera*, cultivated for the purpose, and generally called the delúwang, or paper tree.

A variety of vegetable substances used in dyeing are also found here; among these are the *toru*, or indigo, which is extensively cultivated; and the *wong-kudu*, which affords a lasting scarlet. A black dye is obtained from the bark of several exotic trees, united with the rind of the *mangústin* fruit. A yellow dye is also procured from an exotic wood, heightened by the addition of the bark of the *nangka* tree, and a variety of the mango.

Extensive forests of the jábi, or teak of India, are found in most of the eastern provinces; but the most important occur in the central districts. There is much

valuable information connected with the teak-tree, which we reserve for a separate article.

Besides the teak, there are several kinds of wood or timber, employed not only for innumerable domestic purposes, but also in the various native arts, manufactures, and commerce, for those purposes in which Europeans employ metal. There are also several useful trees thus noticed by Raffles:—

The soap tree, of which the fruit is used to a very great extent in washing linen:—the *kasémak*, from the bark of which is made a varnish for umbrellas:—the *sampang*, from the resin of which the natives prepare a shining varnish for the wooden sheaths of kríses:—the cotton tree, from which a silky wool is obtained for stuffing pillows and beds:—the wax tree, which, though scarce in Java, grows abundantly on some parts of Madúra: (the kernel by expression, produces an oil, which some time after becomes hard, and bears a resemblance to wax; it may be burnt in lamps or converted into candles, and affords an agreeable odour): the *bendúd*, a shrub producing the substance of which the elastic gum commonly called Indian-rubber, is prepared; the art of preparing it in this form is, however, unknown in Java. Torches are made of it, for the use of those who search for birds' nests in the rocks, and it serves for winding round the stick employed to strike musical instruments, as the gong, &c., to soften the sound. The *minyak káwon*, or niátu, is a very useful tree, which grows solitary in all, and abundantly in some parts of the island, and produces a kind of tallow.

The vine was formerly cultivated in some of the eastern provinces; but an apprehension on the part of the Dutch East India Company that its cultivation here might interfere with the wine trade of the Cape of Good Hope, induced them to discourage it, and the preparation of wine from the grape was strictly prohibited.

The marvellous account of the Upas, or poison tree of Java, which was once received with equal astonishment and credulity, has been proved to be an extravagant forgery. There are two trees in this island from which poison is extracted, viz., the *antjar* and the *chetik*. The former is called *Bopon upas*, or the poisonous tree: it is a high forest tree, from whose outer bark poison is extracted in the form of a milk-white sap. But its exhalations are not poisonous, nor is it, as was formerly supposed, hurtful to surrounding plants: creepers and parasitical plants are found winding in abundance about its trunks and branches.

Among the animals of Java there are no elephants, camels, or asses. The horses are of a small breed, but strong, fleet, and well-made. The buffalo is very common. It is a strong tractable animal, capable of long and continued exertion, but it cannot endure the heat of the mid-day sun. It is shy of Europeans, but submits to the management of the smallest child of the family in which it is domesticated. The cows in Java afford little or no milk beyond what is barely sufficient for the nourishment of the calf. The draught ox, where pasture is good, is a strong active animal. Goats are numerous, and of small size: sheep (called here European goats,) are scarce and small. As in other sultry climates, the sheep have a coarse woollen coat, which is employed for stuffing saddles, pillows, &c., but it is not much valued.

Among beasts of prey there are several species of the tiger, and tiger-cats, the jackal, and several varieties of the wild dog; and among other wild quadrupeds the rhinoceros, the wild Javan ox, the wild hog, and the stag: the last, as well as the rib-faced and axis deer, is tamed and fattened for food. The rhinoceros and the wild hog (the latter especially) are injurious to plantations.

Among birds may be mentioned the peacock, which is very common in large forests, and that interesting bird, the *Hirundo esculenta*, the small swallow which forms the edible nests annually exported in large quantities from Java and the Eastern Islands for the Chinese market. We have already given a short notice of this bird in Vol. XIII., p. 241 of our work, and may here quote the interesting remarks of Raffles on the same subject:

These birds not only abound among the cliffs and caverns of the south coast of the island, but inhabit the fissures and caverns of several of the mountains and hills in the interior of the country. From every observation which has been made on Java, it has been inferred that the mucilaginous substance of which the nests are formed is not, as has been generally supposed, obtained from the ocean. The birds, it is true, generally inhabit the caverns in the vicinity of the sea, as agreeing best with their habits, and affording them the most convenient retreats for attaching their nests to; but several caverns are found inland, at a distance of forty or fifty miles from the sea, containing nests similar to those on the shore. From many of their retreats along the southern coast, they have been observed to take their flight in an inland direction, towards the pools, lakes, and extensive marshes, covered with stagnant water, as affording them abundance of their food, which consists of flies, musquitos, gnats, and small insects of every description. The sea that washes the foot of the cliffs, where they most abound, is almost always in a state of the most violent agitation, and affords none of those substances which have been supposed to constitute the food of the esculent swallow. Another species of swallow on this island forms a nest, in which grass, or moss, &c., are merely agglutinated by a substance exactly similar to that of which exclusively the edible nests consists. This substance, from whatever part of these regions the nests be derived, is essentially uniform, differing only in the colour, according to the relative age of the nests. It exhibits none of those diversities which might be expected if it were collected casually (like the mud employed by the marten, and the materials commonly employed in nest-making), and applied to the rocks. If it consisted of the substances usually supposed it would be putrescent and diversified.

Dr. Horsfield thinks that it is an animal elaboration, perhaps a kind of secretion: but to determine its nature accurately it should be carefully analysed, the anatomy of the bird should be investigated, and its character and habits watched.

In addition to this information we may state that M. Dobereiner and Mr. Brande have analyzed some of these nests: their experiments do not indicate the substance of these nests to be of animal origin, but to be more allied to the vegetable gums. M. Valenciennes states distinctly that these nests are made of the branches of a certain fucus; and M. Desfontaines, a very expert botanist, arrived at the same conclusion by comparing some of the colourless fucus brought from the Moluccas with the composition of the nests in question. Many of the vegetable productions of the Indian Ocean are edible, and one of them, the *Fucus sacchariferus*, contains a large portion of sugar; and it may probably be found hereafter that these celebrated edible nests are obtained from that particular sea-weed.

Among the feathered tribe the fire pheasant of Java is one of the most deservedly distinguished. It is called the fire pheasant from the circumstance of its having upon the back, just above the tail, a mass of feathers of an ardently luminous colour. In some lights this is so bright as to appear like a flame of fire. The darkest tint about the neck and body is of an intense purple, deepening almost into a Prussian blue. This pervades the neck and back, gradually subsiding towards the tail until it terminates in the flame-coloured feathers just mentioned. The tuft on the head is dark blue, but the colour is less intense than that of the back. About the eyes, which are of a deep scarlet, the feathers assume a tint of pale greenish azure.

The beak is yellow, blended with brown, and the legs are red. From the tail two white feathers branch with a graceful curve, terminating in a black circular spot, like the tail feathers of the peacock. The white streaks upon the body are on a ground of bluish purple, similar in tint to the wings, but not so dark. The bird is about the size of a common dunghill cock. The hen is of a reddish brown, with nothing of splendour in her plumage. Several specimens of this bird have been sent to England, but in all of them the two long tail feathers are wanting, which circumstance has led to a doubt as to their existence in the living bird. The Rev. Mr. Caunter,

however, states that in Java those feathers are so highly valued that the Javanese invariably pluck them from the bird whenever it is obtained, and sell them at a high price. This will at once account for the specimens being sent to Europe without the tail feathers.

The kayman abounds along the shores and in the principal rivers of the island, but according to Raffles, the animal resembles more the crocodile of Egypt, than in that of the Ganges, or the American alligator. In its manners, habits, and destructive qualities, it resembles the largest animals of this genus. Its eggs are eaten by the natives, and the fat is collected for medical purposes. There are various kinds of lizards; two varieties of turtle; the green frog, which is frequently eaten; and several varieties of serpents said to be poisonous; but against the bite of these the natives apply no remedies worthy of notice; charms and superstitious applications are generally resorted to. According to the account of the natives, a small agile serpent frequently ascends trees, and suspending itself by the tail, seizes upon small animals passing below. Fish is abundant. Honey and wax are produced by three species of bees inhabiting the large forests, but they are both collected in very inconsiderable quantities. Silk-worms were once introduced by the Dutch near Batavia, but attention to them did not extend among the natives. The chrysalis of the large atlas affords a coarse silk, which, however, is not collected for use. Many species of insects attack both fruit and corn, sometimes to the destruction of the crops of whole districts. The natives sometimes attempt to extirpate the insects by burning chaff and brimstone in the fields. There are scorpions and centipedes, but their bite is not greatly dreaded: the natives generally apply a cataplasm of onions to the wound.

Few minerals are found in Java. Iron pyrites occur in small quantity in several districts, and indications of gold, silver, and mercury have been observed. Salt is procured by evaporating sea-water at different parts of the northern coast. Saltpetre is extracted from the earth of some caves, and sulphur is procured in the neighbourhood of the volcanoes.

SUMMER NIGHTS IN NORWAY.

At that season, the course of the sun is so oblique to the plane of the horizon, that while he never rises high in the zenith, he also never sinks far beneath view. Unlike, therefore, "the set of tropic sun, who sudden sinks, and all is night," the glorious orb, for some time before and after the summer solstice, remains so few degrees below the horizon, that the refraction of its rays preserves a perpetual twilight: how holier, sweeter far than garish day, and yet how different from our own Midsummer nights, sweet though they be! The light is strong enough to enable one to read or write in the interior of a room: and stars even of the first magnitude are invisible. Yet it is a chastened, mellow light; not casting strong shadows, but throwing a golden mantle of tranquil repose over every object it touches and beautifies. It is impossible to describe the peculiar effect it produces, not only upon the eternal snows of Sneehættan, or, "the pine forest's immemorial shade," or the silvery cataract's ceaseless turmoil; but still more upon a sleeping city, like Trondhjem. The buildings lie so palpably stretched before the eye, yet so harmoniously blended together, their picturesque points heightened, their harsher defects softened down; the vast Fjord expanding distinctly without a wave or ripple to the feet of the distant blue mountains; the boats rocking idly by the shore; the scenes of labour silent as the grave; all the records of Nature and of man so perceptible, yet so still; it needs but to follow the musings of the imagination to fancy oneself alone in a new world, or realizing the conceptions our childhood formed of Fairy-land. However dreamy such fancies may appear to others, not conversant with these latitudes, they pourtray but faintly the emotions I have felt on those lovely Northern nights, which are classed in my memory of memories with the delicious evenings of Naples and Baiæ.—*Two Summers in Norway.*

ON DOUBLE AND MULTIPLE STARS.

In our Supplements relating to Astronomy we briefly alluded to the phenomena of *double stars*, as a department of that beautiful science which could not be wholly overlooked. But we will take the present opportunity of giving a summary of the views and labours of astronomers on this point. The French Academy of Sciences a few years ago awarded a prize to Sir John Herschel, for his discoveries in this extensive field, and M. Arago thereupon traced the progress which had been made therein.

The names of *double*, *triple*, and *quadruple stars*, are given by astronomers to small groups of two, three, or four stars, so evidently connected by some bond of mutual attraction as to be classed together. In the ordinary view which we take of the starry heavens, even when aided by a telescope, the stars seem separated one from another; but observers of first-rate ability have found, by the aid of powerful instruments, that many of these seemingly single stars are really double, being separated into two by a distance so minute as to be inappreciable to other observers. Sir W. Herschel, who was the first to pay steady attention to this subject, classed all the double stars which he discovered under one or other of four heads, according to the angular separation between their component halves; and he thus catalogued more than four hundred double stars, a number which he increased before his death to five hundred. After Herschel, Professor Struve, a distinguished continental astronomer, explored the heavens with a magnificent telescope made by Fraunhofer, and raised the number of double stars to more than three thousand. Struve had examined a hundred and twenty thousand stars, from the 1st to the 8th magnitude; which, therefore, gives one double star to every forty single ones.

The triple and quadruple stars do not appear to be very abundant, perhaps on account of the difficulty of discovering them.

The two component stars of which a double star consists have in general different degrees of brightness, and sometimes even a difference of colour. Often the brighter of the two presents a reddish-yellow colour, while the other presents a greenish-blue tint. About sixty double stars have been enumerated, in which the brighter presents a tint varying from white or light-yellow to red, and the other a tint partaking more or less of blue or green.

The value which astronomers place in this discovery rests partly on the hope that by its means the distance of the stars might be ascertained. Galileo in the seventeenth, and Dr. Long in the eighteenth centuries, both thought that if two stars differing in brilliancy, could be viewed when nearly in a right line, that is, when one nearly obscured the view of the other, means might be furnished for determining their distances; and it is said that the elder Herschel discovered the double stars while seeking to discover among the various constellations two stars sufficiently close together for this purpose: he found many that were extremely close, but he also found that in such cases the brighter of the two seemed to act as a sun or centre, round which the other revolved. The less bright star was sometimes to the east, at others to the west; now above, now below, the brighter one; all which is explicable only on the hypothesis of one revolving round the other. Thus, as often happens in science, a search for one thing afforded another still more important.

The method by which the double stars are viewed is described by Arago thus:—

Two very fine threads must be stretched through the focus of a telescope. The one must pass across the centre of the circular space denominated the "field of vision," and must be immoveably fixed to the tube. The other thread must turn round the same centre, so as to coincide when

necessary with the stationary thread, or to make with it an angle in any direction, right or left; these angles are to be measured upon a graduated circle, connected with the tube. In making an observation, the brighter star is first placed at the intersecting point of the two threads; and the moveable thread is then turned round, till brought accurately over the other star.

It will be seen that this method relates not merely to the detection of the double star, but to the measurement of the apparent angular distance between its component halves; a point of delicacy into which we need not further enter here. Suffice it to say that astronomers indicate the relative positions of the two stars by the angle which a horizontal line passing through the brighter star when in the meridian, bears with the straight line that joins this star to the other. By the aid of a micrometer attached to a telescope, astronomers are able to determine whether the apparent distance between the two stars varies.

The period taken for the revolution of the smaller, or least bright star, round the other is surprisingly great. One in the constellation of the Great Bear takes fifty-eight years, others two hundred, four hundred, and even so far as twelve hundred years: that is, the rate at which the moving star now progresses is such, that twelve hundred years must elapse before a similar rate of motion will complete its circuit. One of the double stars, discovered by Sir W. Herschel in 1782, completed its circuit in 1840, and has now entered on another similar course.

In some cases the *edge* of the orbit of the moving star is towards the earth, so that the only evidence of motion is afforded by the alternate change of position from the right to the left, and from left to right, of the brighter star; while in other cases motion in an elliptical orbit is clearly appreciable. Hence, it arises that in some cases a system known to be double appears single, because the duller star is at the present time exactly between the earth and the brighter star, forming a true eclipse or occultation of the latter.

It has been found, taking the relative brightness of the stars as an index of their size and distance, that the law of attraction, varying as the square of the distance, seems to operate even in those remote portions of the heavens, thus giving a grand extension to the principles of gravitation. This law once being known to operate on double stars, if the distances of these stars from the earth could be determined, then the *masses* of those of the stars whose relative motions are known might be compared with the mass of the earth or sun. Arago goes through a beautiful, but for our pages too complicated, series of reasonings to show how this could be effected if the distances from the earth were known; he shows that astronomers, however astonishing it may appear to others, are able to demonstrate that if the sun could by any possibility be weighed at one end of a balance, there would be required 337,000 terrestrial globes to balance it at the other; and he truly remarks that "of all the results which constitute the glory of modern astronomy, none so much strikes the imagination of those who are not acquainted with the laws of celestial mechanics, as the determination of the masses of the stars;" and that "science, in being enriched with a knowledge of the movements of the double stars, has made an immense stride in the solution of a problem which seems far removed above the intelligence of man. The day in which the distance of a double star shall be determined will be the day in which it may be weighed, in which we shall know how many millions of times it contains more matter than our globe."

The mathematical processes at the command of the astronomer, aided by refined astronomical instruments, have enabled him to make something like an approach to a determination of the distance of the stars, which determination it is expected will be aided by the phenomena of double stars. The approximation to which we allude is expressed in these terms, that the distance of these stars is now known to be *not less* than a certain amount; but how much greater is for future observations to determine. Thus, one particular double star was found thirty years ago to be *not less* than half a million times farther from the earth than the sun is; a distance which, expressed in numbers, would wholly baffle common conceptions; but how much it may be *more* than this, cannot yet be ascertained.

It is supposed by many astronomers, that the difference of colour often observable in the two stars of a binary group is due to the optical principle of *contrast*, by which "accidental colours" are produced. If a brilliant green object be seen on a white ground, the white most contiguous to the green assumes a pink hue; if the object be blue, the accidental colour becomes orange, &c. Now as the blue and green stars are generally the smaller in their respective groups, it is supposed that the more brilliant ruddy light of the larger star produces that blue or green appearance, and that the stars do not really emit a light of the last mentioned kind. In some few cases, however, a bluish secondary star accompanies a brilliant white primary, a combination which cannot be due to contrast; and, therefore, it is supposed that some of these stars really present a blue tinge, independent of the effect of the companion star. There is a remark by Arago on this point, which shadows forth a speculation equally vast and beautiful:—

We must look to time and accurate observations, to inform us if the green and blue stars be not suns which are already in the process of waning; if the different shades of these stars do not indicate that their combustion is proceeding with different degrees of intensity; and, finally, if the tint, with the excess of the most refrangible rays, which the lesser star often exhibits, be not owing to the absorbent power of an atmosphere which the action of the star, usually much more brilliant than that which it accompanies, may develope.

We may remark, in conclusion, that the detection of double stars furnishes one of the best tests for the excellence of a telescope, since nothing less than the most perfect combination of parts in the instrument can make such minute divisions perceptible to the eye.

TALK to a blind man: he knows he wants the sense of sight, and willingly makes the proper allowances. But there are certain internal senses which a man may want, and yet be wholly ignorant that he wants them. It is most unpleasant to converse with such persons on subjects of taste, philosophy, or religion. Of course, there is no *reasoning* with them, for they do not possess the facts on which the reasoning must be grounded. Nothing is possible but a naked dissent, which implies a sort of unsocial contempt, or, what a man of kind dispositions is very likely to fall into, a heartless tacit acquiescence, which borders too nearly on duplicity.—SOUTHEY.

THE Great Turk's dogs, and the manner of keeping them, (says the merchant Sanderson,) are worth the sight, for they have their several attendants as if they were great horses, and have their clothing of cloth of gold, velvet, scarlet, and other colours of cloth; their sundry couches, and the places where they are kept, most cleanly. My Lord Zouch when he was there, as Master Burton said, did like exceedingly well of this place and attendance of the dogs. When the Great Turk went out of the city toward the wars, it was with wonderful great solemnity and notable order, too long to describe particularly: but I remember a great number of dogs led afore him, well manned, and in their best apparel, cloth of gold, velvet, scarlet, and purple cloth.—PURCHAS.

LONDON:
JOHN WILLIAM PARKER, WEST STRAND.
PUBLISHED IN WEEKLY NUMBERS, PRICE ONE PENNY, AND IN MONTHLY PARTS, PRICE SIXPENCE.
Sold by all Booksellers and Newsvenders in the Kingdom.

THE

Saturday Magazine.

No. 640. JUNE 25TH, 1842. { PRICE ONE PENNY.

JAVANESE SKETCHES. IV.

A JAVANESE IN THE COURT DRESS, AND IN THE WAR DRESS.

JAVANESE SKETCHES.

IV. MANNERS AND CUSTOMS OF THE JAVANESE.

THE Java, or Javanese language seems to belong to that of a more ancient nation than the Malays. The native population of Java, Madura, and Bali use exactly the same written character, so that one generic language seems to prevail throughout these islands. Of this language, however, there are four dialects, differing so materially from each other as to be generally considered separate languages. But, as Raffles remarks, it is rather by admixture of other languages than by mere difference of dialect, that they are distinguished. The Javan language is as intimately connected with the Malaya, or general language of the Archipelago, on the one hand, as it is with the Sanskrit and Pali on the other. In its structure it is simple and regular, but remarkable for the profusion of words contained in it, for the minute distinctions and shades of meaning, and the consequent extent of synonyms, and for difference of dialect. Raffles says that in point of copiousness it may be put in competition with many of the more cultivated languages of Europe and Asia, and that a dictionary would perhaps be far from complete if it comprehended less than 20,000 words.

But there is no feature of the language more remarkable than the distinction between the common language and what may be termed the polite language, or language of honour. The latter contains many words of Sanskrit origin, and a portion of Malaya, and when borrowed from the vernacular language, the words are slightly altered in orthography and pronunciation, to mark the distinction. So clearly is the line of distinction drawn in Java between the higher and lower classes of society, that on no account is any one, of whatever rank, allowed to address his superior in the common or vernacular language of the country. This language is exclusively applied when addressing an inferior, or among the lower orders, where distinction of rank may not be acknowledged. Persons of high and equal rank, when discoursing among themselves, sometimes use the polite language, but in general they adopt a medium, by introducing words belonging to both branches of the language, and this is generally adopted by them in epistolary correspondence.

The knowledge of both languages is indispensable to

those who have to communicate with persons of a different rank from themselves; for while the one is the language of address, the other must be that of reply. Children are accustomed from their infancy to employ the polite language in addressing their parents and relations, and this, added to the mode in which they are instructed in the written language of their country, early impresses upon their memory the corresponding terms to be used according to the occasion.

In addition to the languages already mentioned, there is a poetic or classic language, in which are written all the historical and poetical compositions of note, as well as most of the ancient inscriptions on stone and copper, which are found in different parts of the island.

The different languages used between persons of different ranks is probably only one of those gradual results attending the gradual growth of arbitrary power, exercised over a simple and inoffensive people. Its effects can be traced in the general relations which subsist between different ranks. No person is allowed to stand in the presence of a superior. When a native chief moves abroad, it is usual for all persons of inferior rank among whom he passes to lower their bodies to the ground, till they actually sit on their heels, and to remain in this posture till he is gone by. The same rule is observed within doors, and instead of an assembly rising on the entrance of a great man, as in Europe, it sinks to the ground, and remains so during his presence.

Marriages in Java are not contracted by the parties themselves, but by their parents or relations on their behalf. Such interference is rendered necessary by the early age at which the matrimonial union is formed. During the period that intervenes between the application of the friends of the boy, to the parents or guardians of the girl for their concurrence in the match, and the obtainment of it, her condition is distinguished by the term tétákon (enquired for): when the consent of her parents is obtained, it is termed lámar (solicited). When matters have proceeded thus far, a present of different valuables is sent by the intended bridegroom to the bride, and her acceptance of it, implying that she concurs in the previous steps taken towards her settlement, renders the contract binding. By any reluctance to complete his engagement, the bridegroom forfeits to his betrothed these earnest gifts; but, if the obstacles originate with her, she is bound to return them.

A "fortunate" day is selected for the marriage, when the parties proceed to the mosque, and a short ceremony is performed. Should the bridegroom be unable to attend, he follows the singular custom of sending his *kris*, or dagger, which is deemed a sufficient representative for its owner, who, however, performs his part in the subsequent processions by a regularly appointed proxy.

On the wedding day, or sometimes the day following, the bridegroom dressed in his best clothes, mounted on horseback, accompanied by all his friends, and attended with music in the front and rear, proceeds at noon to the dwelling of the bride, who, on his approach, comes out to meet him at the door. In some districts, before their nearer approach, the bride and bridegroom throw simultaneously a bundle of siri (betel) at each other with considerable force, with the intention, it is said, of learning, from the dexterity with which the parties respectively perform this singular feat, and the success that attends it, which of them will be best able to maintain their privileges or gain an ascendancy during the continuance of their union. They prognosticate that, if the bundle of the bridegroom touch the head of the bride, it is an infallible sign that he must rule; otherwise, the reverse.

After this, the bride receives the bridegroom with a low obeisance: both are then placed in a situation elevated above the rest of the company and in token of ever afterwards sharing the same sustenance, they commence eating betel from the same betel-box.

The marriage ceremonies are subject to variations in different provinces; but the general features are such as we have described them.

The Javanese are fond of dramatic entertainments, of which they have two kinds; the *tópeng*, wherein the characters are represented by men, who, except when performing before the sovereign, wear masks: and the *wáyang*, in which they are represented by shadows.

The subject of the tópeng is invariably taken from the adventures of Pànji, the favourite hero of Javan story. In the performances before the sovereign, the several characters themselves recite their parts; but, in general, the Dalang, or manager, recites the speeches, while the performers have only to "suit the action to the word." The subject of the performances in the wáyangs, or scenic shadows, is taken from the history or mythology of the people. The characters are represented by figures, about two feet high, stamped or cut out of pieces of thick leather, and painted and gilt with great care so as to form some supposed resemblance of the characters of the individuals intended to be personified. The figures are, however, strangely distorted and grotesque, the nose in particular being unusually prominent. The figures are fastened upon a horn spike, and have a piece of thin horn hanging from each hand, by means of which the arms, which are jointed at the elbow and shoulder, can be moved at the discretion of the manager. A white cloth is drawn tightly over an oblong frame, ten or twelve feet long and five feet high, and being placed opposite the spectators, is illuminated by means of a lamp hanging behind it. Previous to the commencement of the performance, the dalang, who is seated behind the curtain, arranges the different characters on each side of the curtain, by sticking them into a long plantain stem which is laid along the bottom. Music begins, and then the several characters are presented, extracts of the history are repeated and the dialogue is carried on, generally at the discretion and by the invention of the manager, who not only puts the puppets in motion, but repeats their parts, interspersing them with detached verses illustrative of the story. The dalang is a person of great importance on these occasions: he animates the whole machinery of the piece, regulates the time of the music with a small hammer, and undertakes the parts of all the performers.

The Javanese are also much attached to dancing, to the performances of posture-masters or clowns: they also delight in tilts and tournaments; combats between the buffalo and the tiger; between the ram and the wild-hog, and other exhibitions in which the senses or the passions are likely to be gratified.

Among their games of skill may be reckoned those of chess, drafts, and several minor games played with pieces or balls on boards of a somewhat similar construction.

In chess (*chatur*,) the pieces are named the *ratu* or king; the *pateh* or minister, corresponding with our queen; two *prahu* or vessels, corresponding with our rooks; two *mantri*, corresponding with bishops; two *járan* or horses, corresponding with knights; the *bidak*, or pawns: and are arranged as in the European game, except that each king is placed on the left-hand of the queen, and consequently opposite to the adversary's queen. The moves are also the same; except that the king, if he has not been checked, may move two squares the first time, either as a knight or otherwise; and that the pawn may move two squares the first move, even though it should pass the check of an adversary's pawn. When a pawn reaches the adversary's first line, it must retrograde three moves diagonally before it can become a queen, except it has reached the rook's square, in which case it becomes a queen at once. There may be any number of queens on the board at one time. The king cannot castle after having been checked. Castling is performed by two moves; the castle must first be brought up to the king:

after which the king may pass over the castle at any future move, provided he shall not have been checked, or that no piece has occupied the square he would move into. A piece or pawn must remain on the board till the last; if the king is left alone, it is considered as stalemate, and he wins.

In the transactions of money concerns, the women are always considered superior to the men, and from the common labourer to the chief of a province, it is usual for the husband to intrust his pecuniary affairs entirely to his wife. The women alone attend the markets, and conduct all the business of buying and selling. It is proverbial to say that the Javan men are fools in money matters. The women also perform the offices of barbers and hair-dressers.

The Javanese mode of thief-taking is curious. As it is usual for a thief to have but little covering on his body, and oil himself all over, that he may slip from the hands of any one who may seize him, the Javanese make use of a long wooden pole, with branches of brambles inverted within a fork at the end, and by means of this simple contrivance they avoid the risk of being wounded, and effectually secure the offender, who cannot escape without tearing his skin.

The written law of the island, according to which justice is administered and the courts are regulated, is that of the Koran, as modified by custom and usage. The Javanese have now been converted to the Mahommedan religion about three centuries and a half; but, as Raffles remarks, "of all the nations who have adopted that creed, they are among the most recent converts; and it may be safely added, that few others are so little acquainted with its doctrines, and partake so little of its zeal and intolerance."

In these Sketches of Java and the Javanese our chief authority has been the *History of Java* by Sir Thomas Stamford Raffles, to which admirable work we must refer the reader who desires further information on this interesting subject. Our object has been to give a general idea of Java and the Javanese as they are, and not as they have been. We have therefore omitted all mention of the celebrated antiquities which abound in the island to such an extent that one writer is almost disposed to consider Java to have been the stronghold of Hinduism. In a future article we propose to describe the ruins of one vast pile called "The Thousand Temples," when we shall have an opportunity of describing the ancient condition of this interesting island.

The colonial history of Java may be summed up in few words. The Portuguese reached Java in 1511, and formed small settlements shortly after. The Dutch in 1595 established themselves at Bantam, where, in 1602, the English erected a factory. This was the first East India possession of the English. The English and the Portuguese were, however, soon obliged to yield to the Dutch, who built Batavia, and gradually enlarged their dominion, until about the middle of the eighteenth century they succeeded in dividing the empire of the Susuhúnan into two parts, and appropriated the greater portion to themselves. At the same time both the Susuhúnan and the Sultan became subject to the Dutch, and were obliged to sell them, at low and fixed prices, large quantities of rice, sugar, coffee, and pepper. When Holland was united to the empire of Napoleon, the British took possession of the island in 1811, but restored it to the Dutch in 1816, after the fall of Napoleon.

Whence comes it to pass that we have so much patience with those who are maimed in body, and so little with those who are defective in mind? It is because the cripple acknowledges that we have the use of our legs; whereas the fool obstinately maintains that we are the persons who halt in understanding. Without this difference in the case, neither object would move our resentment, but both our compassion.—Pascal.

BATTLES BETWEEN RED AND BLACK ANTS.

M. Hanhart saw these insects approach in armies composed of their respective swarms, and advancing towards each other in the greatest order. The *Formica rufa* marched with one in front, on a line from nine to twelve feet in length, flanked by several corps in square masses, composed of from twenty to sixty individuals.

The second species (little blacks) forming an army much more numerous, marched to meet the enemy on a very extended line, and from one to three individuals abreast. They left a detachment at the foot of their hillock to defend it against any unlooked-for attack. The rest of the army marched to battle, with its right wing supported by a solid corps of several hundred individuals, and the left wing supported by a similar body of more than a thousand. These groups advanced in the greatest order, and without changing their positions. The two lateral corps took no part in the present action. That of the right wing made a halt, and formed an army of reserve; whilst the corps which marched in column on the left wing manœuvred so as to turn the hostile army, and advanced with a hurried march to the hillock of the *Formica rufa*, and took it by assault.

The two armies attacked each other, and fought for a long time without breaking their lines. At length, disorder appeared in various points, and the combat was maintained in detached groups; and after a bloody battle, which continued from three to four hours, the *Formica rufa* were put to flight, and forced to abandon their two hillocks, and go off to establish themselves at some other point with the remains of their army.

The most interesting part of this exhibition, says M. Hanhart, was to see these insects reciprocally making prisoners and transporting their own wounded to their hillocks. Their devotedness to the wounded was carried so far that the Formica rufa, in conveying them to their nests allowed themselves to be killed by the little blacks, without any resistance, rather than abandon their precious charge.

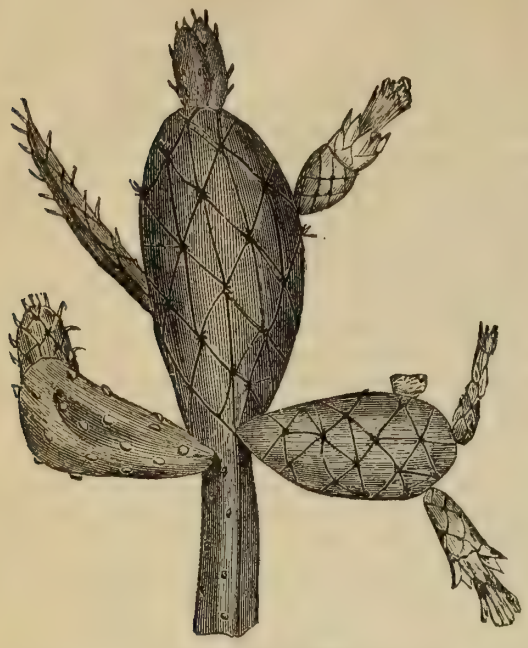
From the observation of M. Huber, it is known that when an ant-hillock is taken by the enemy, the vanquished are reduced to slavery, and employed in the interior labours of their habitation.—*Bull. Univ., Mai*, 1826.

Do you not apprehend that imitations, if they shall have been practised and persevered in from early youth, become established in the habits and nature, in the gestures of the body, and the tones of the voice, and lastly, in the intellect itself.—Plato.

One of the most remarkable features in the history of the gipsies is the striking similarity of their pursuits in every region of the globe to which they have penetrated; they are not merely alike in limb and in feature, in the cast and expression of the eye, in the colour of the hair, in their walk and gait, but everywhere they seem to exhibit the same tendencies, and to hunt for their bread by the same means, as if they were not of the human, but rather of the animal species, and in lieu of reason were endowed with a kind of instinct which assists them to a very limited extent and no farther. In no part of the world are they found engaged in the cultivation of the earth, or in the service of a regular master; but in all lands they are jockeys, or thieves, or cheats, and if ever they devote themselves to any toil, or trade, it is assuredly in every material point one and the same. We have found them in the heart of a wild mountain, hammering iron, and manufacturing from it instruments either for their own use, or that of the neighbouring towns and villages. They may be seen employed in a similar manner in the plains of Russia, or in the bosom of its eternal forests; and whoever inspects the site where a horde of gipsies has encamped, in the grassy lines beneath the hazel bushes of merry England, is generally sure to find relics of tin and other metal, avouching that they there have been exercising the arts of the tinker or the smith. Perhaps nothing speaks more forcibly for the antiquity of this sect or caste than the tenacity with which they have uniformly preserved their peculiar customs, since the period of their becoming generally known; for, unless their habits had become a part of their nature, which could only have been effected by a strict devotion to them through a long succession of generations, it is not to be supposed that after their arrival in civilised Europe, they could have retained and cherished them, precisely in the same manner, in the various countries where they have found an asylum.—Borrad's *Gipsies*.

THE COCHINEAL INSECT.

II.



CACTUS COCHINILLIFER.

We cannot better commence our second notice of this interesting insect than by giving our readers an account of the expedition of M. Thierry de Menonville, by whose persevering exertions the culture of the cochineal first became known and adopted by the inhabitants of St. Domingo, and some other of the West India islands. That gentleman left Port au Prince, in St. Domingo, in January, 1777, with the express object of procuring some of the living cochineal insects in Mexico, and bringing them away, to be afterwards propagated in the French West India islands; an enterprise for the expense of which four thousand livres had been allotted by the French government. He proceeded by the Havannah to Vera Cruz, and was there informed that the finest cochineal insects were produced at Guaxaca, a distance of seventy leagues. Owing to the jealousy of the Spanish government there was great difficulty in penetrating to this district, and M. Thierry had recourse to a method which we cannot pretend to justify, since it owed its success to a departure from truth. He first feigned ill health, and obtained permission to use the baths of the river Magdalena; but instead of going thither he proceeded, through various difficulties and dangers, as fast as possible to Guaxaca, where, after making his observations, and obtaining the requisite information, he affected to believe that the cochineal insects were highly useful in compounding an ointment for his pretended disorder, the gout. Anxious to relieve the supposed sufferer, the unsuspecting Indians allowed him to purchase a quantity of nopals, covered with these insects, of the fine or domestic breed. These he put into boxes and covered with other plants, and pretending that the whole consisted of botanic trifles unworthy of notice, he contrived to get them away and to escape the scrutiny of the government, who had strictly prohibited the exportation of the living cochineal. But his difficulties were not yet over: notwithstanding all his care many of the Mexican plants drooped and died, and he would inevitably have lost the greater part of his precious freight, had not the ship been driven by a violent storm into the Bay of Campeachy, where he found and added to his collection another species of cactus, which, though not so advantageous in the culture of the cochineal as the true nopal of Mexico, yet proved capable of nourishing the insect. This plant, as described by Thierry, agrees precisely with the *Cactus cochinillifer*, which we have given as the illustration of our article. Thierry arrived safely with his acquisition at Port au Prince on the 25th of September of the same year. Though almost unaided in his task he persevered in cultivating not only the fine sort, which he brought from Mexico, but also the *sylvestre*, which he afterwards found wild in St. Domingo; and so successfully, that in 1789 there were more than four thousand plants in a single nopalery, the produce having been ascertained by chemists to be equal in quality to that of Mexico. Unhappily, the political troubles of St. Domingo, consequent upon the French revolution, caused the total destruction of the plantations.

The cactus cochinillifer, or, as Thierry calls it, *Cacte de Campêche*, is nine feet high; the older parts of the stem and branches are cylindrical, or but slightly compressed; the younger branches are everywhere *proliferously* jointed, that is, shooting out new branches at the summit of the former ones; these branches are from four inches to a foot in length, much compressed, flattened, of a dark green colour, and having when young several scattered, curved, fleshy leaves, scarcely half an inch long, which soon fall off, leaving a white scar. This cactus is destitute of spines; the flowers are three inches long; and of a bright rose colour, and are succeeded by a berry of a fine red throughout, having a number of seeds enveloped in pulp. This species has been successfully employed in several of the West India islands for rearing both the wild and the fine cochineal. The Rev. L. Guilding, in writing to Dr. Hooker a few years ago from the island of St. Vincent's, thus spoke of the cactus cochinillifer:—"I possess a considerable nursery of this cactus, inhabited by thousands of the true *Coccus cacti*, and I do not despair of being able to send to the Society of Arts a large quantity of dried insects before the termination of the present year." Like all its congeners, this cactus increases readily by having the joints stuck in the ground, and the plant flourishes best in a dry and barren soil. On this plant the wild cochineal becomes almost as fine as the domestic sort, and loses much of the cottony substance which naturally belongs to it, and which deteriorates from its value.

The great enemies of the cochineal insects, both fine and wild, have been stated to be several smaller insects, which prey upon them and suck their juices; but, according to M. Thierry, the loss arising from this cause scarcely amounts to more than two out of every hundred insects. The most formidable barrier which exists to the cultivation of the cochineal is found in the season itself. The Indians in Mexico are sometimes hindered from gathering the fine cochineal for a whole season on account of the rain; and the same cause ruins their harvests when they have sown too early in October, or too late in April. A heavy storm descending on a district sown with cochineal completely ruins the crop, and with it the hopes and fortunes of the Indians. There are four sorts of rains prevalent in those parts of America where the cochineal is principally found, *i.e.*, first, that which resembles our Scotch mist, consisting of a thick haze or vapour, not at all injurious to either the fine or the wild cochineal; secondly, soft rains, like our ordinary showers of Europe, which are unaccompanied by wind, and have a gentle perpendicular descent, sometimes lasting for four-and-twenty-hours. These do not affect the cochineal sylvestre, but the fine cochineal suffers from them, though if the insect has reached the age of one month it survives their influence. Thirdly, there are heavy showers not driven by winds, but falling in large drops and with considerable violence for the space of a quarter of an hour more or less. The fine cochineal cannot endure these showers, but falls and dies, while the sylvestre bears them, and is but slightly inconvenienced by them. Lastly, there is the tempest, or storm accompanied with thunder, lightning, and violent winds; the rain falls from heaven like a cataract, and

makes a greater noise in its descent than is occasioned by our most violent hail-storms, while it commits more terrible ravages on the vegetable world. These storms are fatal to both sorts of cochineal, though the wild may be in part made useful if gathered the day after the storm, and before those that were killed by it have begun to decay. It generally happens that the heavy rains and tempests cease in October, and do not re-commence before April: all this space is therefore left for the rearing of the cochineal, though there are in those countries, as well as in our own, unexpected changes in the weather, that sometimes blight the hopes of the cultivator. Sometimes when the crop of cochineals has been sown (as it is called) in the early part of October, there comes the last storm of the rainy season, and ruins everything. The only resource in such cases is to commence another sowing immediately, by which means the harvest is only delayed for three weeks or a month.

It remains to notice some of the other species of cochineal, which, before the Mexican insect was known, were employed in the business of dyeing. One of these is an inhabitant of cold countries, which it seems to prefer to more temperate climates. It is common in Poland, and is known as the *Coccus tinctorius Polonicus*. It is found at the root of the plant, which has been named by Ray, *Polygonum cocciferum*, and looks like a little red grain, adhering to the plant. It is very nearly spherical, and the largest nearly equal in bulk to a grain of pepper. Each grain is said to be lodged in a sort of cup like that of an acorn, the external part of which is rough, the internal polished. Sometimes only one or two of these grains are found on a plant, sometimes as many as forty. Observation has shown that from these little grains insects issue forth, which have two antennæ and six feet; that at the end of some days these insects grow shorter and cease to walk; and that when they have become immoveable, their body is covered with a cottony down. What distinguishes this cochineal from the other species is, that after having been round and immoveable, it again moves its feet and changes form, from round becoming oblong. This insect is gathered every two years, immediately after the summer solstice, because then it is full of juice of a purple colour. In order to detach the insect from the plant to which it has affixed itself, it is necessary to take up the latter by the roots; the insects are then scraped off, and the plant replaced in its former situation. The cochineal is separated by means of a sieve from the earth which adheres to it, and is then wetted with vinegar, or hot water, and exposed to the sun to cause it to die and dry up. It is said that this drug is bought by the Turks and Armenians, to dye silk, wool, morocco, and the tails of their horses, while the women employ it to redden the extremities of their feet and hands. Other uses are mentioned for this cochineal, such as the making, with the addition of chalk and gum arabic, a kind of lac, equal to Florence lac. But the properties of the cochineal of the polygonum are so inferior to those of the Mexican insect, that the latter is invariably used in all fine dyes.

There is another species of cochineal, indigenous to Russia, from which the inhabitants extract a crimson dye. No attempt has yet been made in France, that we are aware of, to procure a dye from the insects of this genus, which are so abundant there, and so hurtful to orange and other trees, though it is very probable the attempt might be attended with considerable success.

Of the species that have not been applied to any economic purpose, we may notice that which is nourished by the elm, and which, in appearance, much resembles the Mexican insect. It is principally found in the forked part of the younger branches, and may be seen, towards the middle of summer, resembling a little oval convex mass, of a brown-red colour, surrounded with a white or cottony cord. Towards the middle of July, a great number of young insects issue from the nest, and may be seen running on the branches of the elm: they are of a yellowish-white colour, and have two antennæ and six short feet. They soon fix themselves, and remain immovable all through the winter. In the spring the female lays her eggs, and then dies, dries up, and subsequently falls from the nest. There is also another species peculiar to the branches of the alder: this is the *Coccus farinarius*, remarkable for the abundance of its cottony covering. De Geer stripped one of these cochineals of its covering, and a similar envelope, though less thick, made its appearance on the following day, thus showing the abundance of the provision made for this small and apparently insignificant creature.

The *Coccus ficus caricæ* is a very destructive insect in the south of Europe and the Levant. It produces the worst effect on fig-trees, drying them up by pumping out the juice, and causing the sap to flow. The presence of the insects on these trees is shown by the following marks. The trees lose their leaves sooner than others; in the new shoots the intervals of the knots become smaller every year; the number of figs diminishes; the fruit falls without ripening; the leaves and branches are covered with black spots; and when the trees have gone through these stages of decay, the winter finishes their existence. Very imperfect success has attended the various means devised for getting rid of these insects; is is only during winter that they can be attacked with any advantage, since the methods employed to reduce their numbers would at any other season prove injurious to the trees they inhabit. When a tree is greatly infested with these insects, the figs can scarcely be eaten, for they cannot be gathered without crushing some of the insects, then offensive on account of the thick red juice issuing from them. In drying figs for exportation, care is taken to stir them well upon the hurdles, that any cochineals attaching to them may be the more easily removed.

The annual consumption of true cochineal in Great Britain is about 750 bags, or 150,000 lbs. weight, value 275,000*l*. The fine unadulterated cochineal will have a gray colour, bordering on purple: the gray is owing to the powder which naturally covers the insect, and of which a little adheres, and also to a waxy fat: the purple shade arises from the colour having been partially extracted by the water in which they were killed. The insect is wrinkled with parallel furrows across its back, which are intersected by a longitudinal one; hence they are easily distinguished by a quick eye from the smooth, glistening, black grains, of no value, called East India cochineal, with which it is often shamefully adulterated.

A system of adulterating cochineal has lately been detected, which has been practised for many years on a prodigious scale, by a mercantile house in London. "I have analysed," says Dr. Ure, "about a hundred samples of such cochineal, from which it appears that the genuine article is moistened with gum-water, agitated in a box or leather bag, first with sulphate of baryta in fine powder, afterwards with bone or ivory black, to give it the appearance of *negra* cochineal, and then dried. By this means about twelve per cent. of the worthless heavy spar is sold at the price of cochineal, to the enrichment of the sophisticators, and the disgrace of British trade and manufactures."

The colouring matter of the cochineal is very soluble in water, and is called *carminium*, from its being the basis of a carmine. The value attached to cochineal in our manufactures may be gathered from the quantity imported, and the value annexed to it. The high price of this article has long induced dyers to look out for cheaper substitutes in dyeing red, and both madder and lac have been made to supersede cochineal to a considerable extent. This circumstance, together with improved methods of cultivating the cochineal, has led to a reduction in the price of the latter.

REMARKABLE PROPERTY OF THE FRAXINELLA.

AMONG the physical phenomena exhibited during the life of vegetables, and which may engage us in studies of a curious and interesting nature, one of the most remarkable is that which is generally attributed to the plant called Fraxinella. This plant is said to be surrounded, at particular parts of the day, during the heat of summer, with an inflammable atmosphere, which may be set fire to by bringing a taper near it, and this without causing any injury to the plant itself. In order to account for this remarkable phenomenon, it has been imagined that the plant is continually emitting a vapour, which, not being so readily transmitted by the surrounding air, remains around it in a condensed form, or that it is retained from further expansion by its own vital energy.

This singular fact has not been noticed by botanists except in a very general manner. They do not appear to have studied it attentively for themselves, the only precise details we meet with on the subject being given by Bosc, in the *Dictionary of Natural History*. He says that the extremity of the stalks, and the petals of the flowers, in the fraxinella, are covered with numerous small vessels filled with essential oil. In very hot weather these vessels emit a vapour of a powerful odour, which is inflammable, and so abundant, that if, towards evening when the cooler air has somewhat condensed it, you bring a lighted taper near to the plant there appears all at once a bright light, which spreads around the fraxinella without doing it any injury.

M. Biot was induced by accidentally witnessing this phenomenon to give it his attention and study, and we have translated the results of his observations for the benefit of our readers.

Supposing at first sight, with all others who had studied the subject, that an ethereal emanation really surrounded the plant, he made several experiments, but all of them failed of success: he then examined the cortical vessels from whence the supposed inflammable atmosphere was said to proceed. Those vessels, as seen through the microscope, present the appearance of small glands terminated by a sort of conical gullet, drawn out to a point at its extremity. They have been accurately represented by Mirbel, in his *Elémens d'Anatomie et de Physiologie Végétale*. These glands are distributed more or less abundantly on all parts of the stalk, and especially on the peduncles or flower-stalks, where, at the part where the flower is inserted, they are very numerous. We may also trace them on the edges of the leaflets, and on the edges and veins of the petals, on the stamens, styles, and even on the seeds and ovaries. Among these vessels, some are sessile, others placed on a footstalk, the latter being frequent on the more vigorous parts of the plant. Though at first very small, they increase in proportion to the growth of the plant, and their surface, examined with the microscope under a strong light, presents a beautiful mottled appearance of red and green. This is the case only with the variety bearing red flowers; in the white fraxinella it is entirely green. The interior is filled with a colourless liquid, through which the light is refracted in foci. At the extremity of this point, M. Biot frequently observed a small limpid drop, as if a part of the internal liquid dilated by the elevation of the temperature, or secreted by the vital energy, had escaped without. These observations made him think that the developement of the flame around the plant might be perfectly produced by simultaneous ignition, or almost instantaneously propagated by these numberless vessels filled with essential oil. On this supposition the heat of summer was no longer necessary for the actual production of the phenomenon, but simply for the maturation of the inflammable liquid contained in the vessels, which, once formed and matured, no longer depended upon heat or cold, nor upon the time of the day. Ignition could only thus take place on contact with the inflamed body, or, at least, on a very near approach to contact, in order to burst the vessels. Thus it must take place according to the law of suction and of propagation belonging to small globules in juxtaposition, filled with liquid, and not with the instantaneous effect of a volume of gas. It was in this manner of regarding the phenomenon that M. Biot conducted his succeeding experiments, of which he has given us an account of a few.

On the 26th of April, 1830, he endeavoured to produce ignition on the peduncle of a flowering bunch of the red variety of fraxinella, which appeared to be full of vessels well filled with the inflammable liquid. He could not obtain a continued flame, but merely a few local explosions, such as we can produce by spirting the essential oil from the rind of an orange on the flame of a candle. The rest of the plant being less thickly covered with the secreting glands, did not present any appearance of ignition. This experiment was repeated at the same period of the following year, with precisely the same result. In those parts where the plant had previously been ignited, the glands seemed blackened and obliterated. On the 15th of May, 1830, many flower stalks had acquired their full developement, the glands being considerably swelled, and furrowed upon their surface. The weather throughout the day was cold and dry, as it was in the evening when he tried his experiment. The trial succeeded when the flame was held under the flower stalks of some completely or partially developed blossoms, especially near the insertion of the flowers, where the glands were most abundant. The ignition, though evident, was not sufficient to rise spontaneously from the base of one flower to that of another; it was necessary to apply the taper successively to each point, but so slightly as not to injure the stalks. Among those which presented the phenomenon were some which had been attempted in vain, the month before; and even the others, where the the glands had been actually destroyed by a previous ignition, were capable of yielding it anew, after the lapse of a week, other glands doubtless becoming maturated after the former trial. In the third trial, which took place on the 22nd of May, the developement of the plant being more advanced, the combustion went on with vivacity on all the stalks. The repetition of the phenomenon was observed many times by M. Biot, who marked its appearance on the same stalk at different times and under different circumstances. He produced it, on the same stalk, seven or eight times during one season, by choosing successively the different parts on which to operate; nor did he find it necessary that the experiment should be made particularly in the evening, any more than at another part of the day. Lastly he observed, that the flame is easily propagated in an upward direction, especially in the flowering clusters, but that it is much less easy to promote it in a downward direction; it may also take place on the central peduncle of a cluster, without being developed on all the lateral ones, though the latter may be in a proper state to experiment upon, if the taper is applied separately to each.

This power to separate and isolate the effects produced is quite intelligible under the system of globules, separately distributed over all parts of the plant, but it is not consistent with the theory of the existence of a volume of inflammable air, such as is generally supposed to envelope the plant in question.

The phenomenon which we have been describing may be observed on both varieties of fraxinella, that with red and that with white flowers, but less easily and less frequently on the latter, where the glands are somewhat smaller, and are also less thickly disposed on the

stem. We know that the external temperature modifying the degree of maturation of the plant must considerably influence the quantity of essential oil produced by it. So it happens that in cold seasons the glands of the fraxinella are not so perfectly developed as in more favourable ones, and in consequence the production of the curious phenomenon above described is less frequent, and less easy to be observed.

EASY LESSONS IN CHESS.

V.

The information contained in the four previous lessons constitutes as it were the Grammar and Vocabulary of Chess. You have now to become acquainted with the Laws of the Game. The following is the Code of Laws adopted by the London Chess Club, established in 1807, and recently revised by the Committee of that Society. We submit these laws to your notice without attempting to explain or illustrate them. Chess-players in general object to any commentary on their laws: they consider them adequate to explain their own meaning, and should any doubtful case arise as to the intention of a particular law, reference to some disinterested party is far more satisfactory than to the remarks of a Commentator. But before you read these laws we would impress upon you the advice of Mr. Lewis, the eminent player, and author of several valuable works on the game:—

"Always play strictly according to the laws of the game; even if your adversary take back moves, or do not play a piece he has touched, never do so yourself; I have met with many who entirely object to take odds, but who nevertheless are willing enough to take back moves, as if that were not taking odds, and great odds too.

We may add that unless this advice be strictly attended to, you will soon contract a careless and slovenly style of play, and most of the beneficial influence of this noble game will be lost upon you.

THE LAWS OF CHESS.

I. The Chess-board must be so placed that each player has a white corner square nearest his right hand. If the board have been improperly placed, it must be adjusted, provided *four* moves on each side have not been played, but not afterwards.

II. If a piece or pawn be misplaced at the beginning of the game, either player may insist upon the mistake being rectified, if he discover it before playing his fourth move, but not afterwards.

III. Should a player at the commencement of the game, omit to place all his men on the board, he may correct the omission before playing his fourth move, but not afterwards.

IV. If a player, undertaking to give the odds of a piece or pawn, neglect to remove it from the board, his adversary, after four moves have been played on each side, has the choice of proceeding with, or recommencing the game.

V. When no odds are given, the players must take the first move of each game alternately, drawing lots to determine who shall begin the first game. If a game be drawn, the player who began it has the first move of the following one.

VI. The player who gives odds, has the right of moving first in each game, unless otherwise agreed. Whenever a pawn is given, it is understood to be always the King's Bishop's Pawn.

VII. A piece or pawn touched must be played, unless, at the moment of touching it, the player say "*J'adoube*," or words to that effect; but if a piece or pawn be displaced or overturned by accident, it may be restored to its place.

VIII. While a player holds the piece or pawn he has touched, he may play it to any other than the square he took it from, but having quitted it, he cannot recall the move.

IX. Should a player touch one of his adversary's pieces or pawns, without saying "*J'adoube*," or words to that effect, his adversary may compel him to take it; but if it cannot be legally taken, he may oblige him to move the King: should his King, however, be so posted that he cannot be legally moved, no penalty can be inflicted.

X. Should a player move one of his adversary's men, his antagonist has the option of compelling him—1st, to replace the piece or pawn and move his King; 2nd, to replace the piece or pawn and take it; 3rd, to let the piece or pawn remain on the square to which it had been played, as if the move were correct.

XI. If a player take one of his adversary's men with one of his own that cannot take it without making a false move, his antagonist has the option of compelling him to take it with a piece or pawn that can legally take it, or to move his own piece or pawn which he touched.

XII. Should a player take one of his own men with another, his adversary has the option of obliging him to move either.

XIII. If a player make a false move, *i. e.*, play a piece or pawn to any square to which it cannot legally be moved, his adversary has the choice of three penalties; *viz.*, 1st, or compelling him to let the piece or pawn remain on the square to which he played it; 2nd, to move it correctly to another square; 3rd, to replace the piece or pawn and move his King.

XIV. Should a player move out of his turn, his adversary may choose whether both moves shall remain, or the second be retracted.

XV. When a pawn is first moved in a game, it may be played one or two squares; but in the latter case the opponent has the privilege of taking it *en passant* with any pawn which could have taken it had it been played one square only. A pawn cannot be taken *en passant* by a piece.

XVI. A player cannot castle in the following cases:—

1. If the King or Rook have been moved.
2. If the King be in check.
3. If there be any piece between the King and Rook.
4. If the King pass over any space attacked by one of the adversary's pieces or pawns.

Should a player castle in any of the above cases, his adversary has the choice of three penalties, *viz.*:—1st, of insisting that the move remain; 2nd, of compelling him to move the King; 3rd, of compelling him to move the Rook.

XVII. If a player touch a piece or pawn that cannot be moved without leaving the King in check, he must replace the piece or pawn and move his King; but if the King cannot be moved, no penalty can be inflicted.

XVIII. If a player attack the adverse King without saying "Check," his adversary is not obliged to attend to it; but, if the former, in playing his next move, were to say "Check," each player must retract his last move, and he that is under check must obviate it.

XIX. If the King has been in check for several moves, and it cannot be ascertained how it occurred, the player whose King is in check must retract his last move, and free his King from the check; but if the moves made subsequent to the check be known, they must be retracted.

XX. Should a player say "Check" without giving it, and his adversary in consequence move his King, or touch a piece or pawn to interpose, he may retract such move, provided his adversary have not completed his next move.

XXI. Every Pawn which has reached the eight or last square of the chess-board, must be immediately exchanged for a Queen or any other piece the player may think fit, even though all the pieces remain on the board. It follows therefore that he may have two or more Queens, three or more Rooks, Bishops, or Knights.

XXII. If a player remain at the end of the game, with a Rook and Bishop against a Rook; with both Bishops only; with Knight and Bishop only, &c., he must check-mate his adversary in fifty moves on each side at most, or the game will be considered as drawn; the fifty moves commence from the time the adversary gives notice that he will count them. This law holds good for all other check-mates of pieces only, such as Queen or Rook only, Queen against a Rook, &c., &c.

XXIII. If a player agree to check-mate with a particular piece or pawn, or on a particular square, or engage to force his adversary to stale-mate or check-mate him, he is not restricted to any number of moves.

XXIV. A stale-mate is a drawn game.

XXV. If a player make a false move, castle improperly, &c., &c., the adversary must take notice of such irregularity before he touches a piece or pawn, or he will not be allowed to inflict any penalty.

XXVI. Should any question arise, respecting which there is no law, or in case of a dispute respecting any law, the players must refer the point to the most skilful and disinterested bystanders, and their decision must be considered as conclusive.

HERM AND JETHOU.

HERM AND JETHOU!! Ninety-nine persons out of a hundred will say, "I never heard of them: what are they? places, or people, or what?" Let it be my task to tell what they are. If the Right Honourable Secretary for the Home Department were asked to name "the Channel Islands," he would certainly say, "Jersey, Guernsey, and Alderney;" possibly he might add "Sark," for Sark is named in the Orders of Council affecting the Channel Islands: but Herm and Jethou he certainly would not name. The reader will therefore have gathered by this time, that Herm and Jethou are the two smallest of the Channel Islands. Let us spend a summer's day together at Herm and Jethou.

Standing on the pier of Peter's Port, Guernsey, one sees Herm and Jethou opposite, and distant about three miles. I had missed the packet to Jersey, having run down from the hotel, in Guernsey, just in time to see her stern disappear round the rocky islet on which stands Castle Cornet; and finding myself thrown adrift for the day, cast a longing eye at the little isles across the calm morning sea, spotted with fishing-boats, and reflecting in its depths the twenty or thirty French chasse-marées which lay at anchor in the roads. Boats and boatmen are not difficult to be found at Guernsey, and in five minutes I was pushing off from the pier, and making for Herm and Jethou.

Guernsey is seen to greatest advantage from the sea; for the shore being precipitous, and the town of Peter's Port being built on the slope, the effect is striking; backed too and flanked as it is by the towers of Elizabeth College, and by the handsome country seats of the Guernsey aristocracy. An hour's agreeable rowing brought me close to Jethou, the appearance of which is more and more picturesque the nearer it is approached, and, desiring the boatmen to wait, I contrived to leap upon the little pier of rough stones, and commenced the circuit of Jethou. There is one gentleman's house on Jethou, and towards this I made in the first place; but he was from home; he was out among the rocks a-shrimping, a very favourite amusement with the inhabitants of all these Islands; and therefore I was forced to ramble without a cicerone.

I found Jethou one large rabbit warren. Their numbers almost equalled what we read of the penguins, on some of the South Sea Islands. Never saw I such a multitude of wild things before; I could have knocked them on the head by dozens, and unless "the preventive check" be applied, or colonization be resorted to, I know not what is to become of these legions. Nearly on the summit of the island, I found myself in a small orchard, which, as I was afterwards told, produces most excellent cider. On descending to the beach, I met Mr L—— returning from his sport; they were prawns he had filled his basket with, not shrimps—half a stone weight I should imagine. I asked him what he meant to do with them. "Make a pie," said he; but he did not invite me to stay and take a bit. Mr. L—— never leaves the island, unless to paddle himself across to Herm, and is, as may easily be credited, not fond of company.

I found my boatman shrimping also, in the neighbourhood of his boat, and in ten minutes we had crossed the narrow deep channel that separates Jethou from Herm, and landed.

Herm is much larger than Jethou; it is about four miles in circumference, and contains nearly twelve hundred acres of cultivated land; much more is susceptible of improvement, and might easily be redeemed from the empire of furze and wild mint which grows everywhere in the greatest abundance. There are excellent sheep-walks too, but, most unaccountably, no sheep. There are about a score of persons resident in Herm; the lessee, and his agricultural labourers, one of whom keeps a little inn, for the benefit of the shrimpers who come over from Guernsey.

But Herm possesses one peculiar distinction,—an attraction which, during the summer, is the frequent cause of picnic parties from Guernsey,—its shell beach. I have been told by competent judges that the little island of Herm is richer in shells than all the shores of all the rest of the British Islands; and that the shells found there may be considered miniatures of the shells found in most other parts of the world. The divisions of the order *testacea* in this little island extend to upwards of forty genera, embracing upwards of two hundred varieties; and in sponges, corals, and corallines, Herm is as rich as in shell.

The shell beach of Herm, which extends from half a mile to three quarters of a mile, is one mass of shells, unintermixed with either pebbles or sand. Dig with your arm deep as you may, there is still nothing but shells,—minute perfect shells, and fragments of larger shells. The minute shells are extremely pretty, and may be gathered in millions; and although I am myself no conchologist, and might probably commit so great a heresy as to estimate the value of shells by their beauty, I spent a long summer's noon much to my mind in Herm, wandering on the shell beach; lying upon it; digging my hands an arm's length down, and sifting, and examining, and pocketing.

As I returned along the rocks, I observed that several boats with shrimpers had arrived from Guernsey. This amusement is in fact a passion, and is indulged by persons of all ranks; and so various are tastes, in the matter of recreation, that I have seen individuals, who found quite as much pleasure in wading knee-deep for half a day among the rocks to make capture of some handfuls of shrimps, as has ever been afforded to others in the pursuit of the deer or the fox.

It was almost sunset when I had finished my rasher and egg in the little inn; and dusk was beginning to settle over the sea when I entered the harbour of Guernsey.——?

AFFECTIONS OF MAN BEFORE THE FALL.

FOR the lightsome passion of *Joy:* it was not that which now often usurps this name; that trivial, vanishing, superficial thing, that only gilds the apprehension, and plays upon the surface of the soul. It was not the mere crackling of thorns, a sudden blaze of the spirits, the exultation of a tickled fancy, or a pleased appetite. Joy was then a masculine and severe thing; the recreation of the judgment, the jubilee of reason. It was the result of a real good suitably applied. It commenced upon the solidities of truth, and the substance of fruition. It did not run out in voice, or indecent eruptions, but filled the soul, as God does the universe, silently and without noise. It was refreshing but composed; like the pleasantness of youth tempered with the gravity of age; or the mirth of a festival managed with the silence of contemplation. And on the other side, for *Sorrow.* Had any loss or disaster made but room for grief, it would have moved according to the severe allowances of prudence, and the proportions of the provocation. It would not have sallied out into complaint or loudness, nor spread itself upon the face, and writ sad stories upon the forehead. No wringing of the hands, knocking of the breast, or wishing ourself unborn; all which are but the ceremonies of sorrow, the pomp and ostentation of an effeminate grief; which speak not so much the greatness of the misery as the smallness of the mind. Tears may spoil the eyes, but not wash away the affliction. Sighs may exhaust the man, but not eject the burthen. Sorrow *then* would have been as silent as thought, as severe as philosophy.—SOUTH.

THE meaning which any generation puts upon the phrases of Scripture depends, more than is at first sight supposed, upon the received philosophy of the time. Hence, while men imagine that they are contending for revelation, they are in fact contending for their own interpretation of revelation unconsciously adapted to what they believe to be rationally probable. And the new interpretation which the new philosophy requires, and which appears to the older school to be a fatal violence done to the authority of religion, is accepted by their successors without any of the dangerous results which were apprehended. When the language of Scripture invested with its new meaning has become familiar to men, it is found that the ideas which it calls up are quite as reconcilable as the former ones were with the soundest religious views. And the world then looks back with surprise at the error of those who thought that the essence of religion was involved in their own arbitrary version of some collateral circumstance.—WHEWELL.

As there is a foolish wisdom, so there is a wise ignorance, in not prying into God's ark, not inquiring into things not revealed. I would know all that I *need* and all that I *may:* I leave God's secrets to HIMSELF. It is happy for me, that God makes me of his court, though not of his council. —BISHOP HALL.

LONDON:
JOHN WILLIAM PARKER, WEST STRAND.
PUBLISHED IN WEEKLY NUMBERS, PRICE ONE PENNY, AND IN MONTHLY PARTS, PRICE SIXPENCE
Sold by all Booksellers and Newsvenders in the Kingdom.

THE

Saturday Magazine.

Nº 641. SUPPLEMENT, JUNE, 1842. { PRICE ONE PENNY.

THE PHILOSOPHY OF THE EXTERNAL SENSES. III.

THE ECHOING ROCKS OF LURLEY.

ON THE PROPAGATION AND CONDUCTION OF SOUND—MUSICAL SOUNDS—THE REFLECTION OF SOUND—RESONANCE AND SYMPATHETIC VIBRATIONS.

IN the Supplement for April, we presented a general view of the nature and sources of sound, showing the various modes wherein the atmosphere may receive that peculiar disturbance which, when communicated to the ear, constitutes sound. We now take up the inquiry at that point, and proceed to consider :—

1. THE PROPAGATION AND CONDUCTION OF SOUND.

THE manner in which a stretched cord vibrates has been explained in a former section; but the effect which that vibration exerts on the surrounding air has been purposely left undescribed till the present section, to which it properly belongs. When the motion of the vibrating cord commences, a layer of aërial particles, in contact therewith, must be urged forward by the impulse, and be pressed closer to a second layer or stratum contiguous to it. This approach is resisted by the natural elasticity of the air; but the impulse from the moving cord is too powerful to be wholly counteracted thereby, and the second layer or stratum is driven forward by the first: a new disturbance is thus created; for the second layer of particles urged onward by the first, presses on a third, the third on a fourth, and so on, each layer becoming, in its turn, a moving power to the layer next beyond it. If instead of a tended cord, we employ a drum or a plane surface of metal or glass, the principal difference in the result is, that more particles are set in motion at one time; but the impulse is communicated from particle to particle in the same way as if a stretched cord were employed.

As the atmosphere consists of particles of air readily acted upon by each other, the impulse travels onward with great rapidity; but the precise measure of this rapidity has been a very difficult inquiry in the hands of philosophers. There are two circumstances which regulate the velocity of this propagation, viz., the specific gravity of the air, or the weight of matter included within a given bulk, and the elasticity or resistance to compression. It was long ago determined theoretically, that as these two conditions or properties differ in different substances, the propagation of a sonorous impulse should be effected with different velocities in different cases; and this has been found true in experiment.

Sir Isaac Newton, from calculations in which the specific gravity and the elasticity of the air were taken as elements, stated the velocity of sound to be 946 feet per second; by which is to be understood that the disturbance of particles spreads so rapidly as to extend to a distance of 946 feet in one second of time. This assumed velocity, however, was found to be smaller than that deduced from carefully conducted experiments. From investigations made by Derham, Pictet, and other philosophers, at different hours of the day, and in different latitudes, it was found that sound travels at the rate of about 1130 feet per second. This discrepancy between theory and observation threw much obscurity over the subject, until Laplace brought his powerful mind to the consideration of its probable cause. It has been demonstrated that a change in the pressure of the air would not produce any change in the velocity of sound, because the more the density of the air is increased, the greater does the elasticity become; so that in rarefied air and in condensed air, provided *temperature* could remain the same, the velo-

city of sound would be uniform. But it occurred to Laplace, that the temperature of the air must exert a great effect; by an increase of temperature the air is expanded and rendered less dense, while the elasticity which it loses by that expansion is restored by the increase of heat; so that we thus have an equal elasticity and a less density, the two elements which give an increased velocity to the propagation of sound. A given quantity of air expands $\frac{1}{480}$th of its bulk with an increase of 1° of Fahr. in its temperature, a rate of expansion which makes the velocity of sound much greater in a warm than in a cold state of the atmosphere.

When the effect of temperature was taken into account, it was found that the theoretical velocity of sound agreed very nearly with that obtained by experiment; but in order to obtain the utmost possible accuracy in the latter respect, a curious and valuable series of experiments was made in Holland, about twenty years age. A detailed account of these experiments will be instructive, as showing the delicate precautions rendered necessary in the determination of the temperature of the air, the direction of the wind, and the humidity.

Drs. Moll and Beek, who undertook the investigation, selected two elevated spots near Utrecht, one of which was a hill called Kooltjesberg, and the other a similar hill near the village of Amersfoort. The two hills were visible one from the other, and the distance between them was about 18,000 metres (about ten miles). As it was necessary to measure seconds very accurately, time-keepers of a delicate construction were provided at each station, and their action depended on the following principle. Light, although it does not move instantaneously in the strict sense of the term, occupies in its passage a portion of time too small to be measured in any terrestrial experiments, and may therefore be deemed to move instantaneously; whereas sound is known to require about five seconds of time to travel a distance of one mile. If therefore a cannon were fired on one hill, the flash would be seen at another sooner than the sound would be heard.

Such was the principle adopted in the present inquiry. Time-keepers were furnished on such a construction as to work only so long as the finger pressed upon a certain spring, so that when one of the observers saw the distant flash, he instantly pressed the spring and allowed the index hand to move; and when the report was heard, the finger was removed from the spring, and the index stopped; the number of revolutions of the index indicated the time that had elapsed between the flash and the report, which at once measured the velocity of the sound.

At each station were placed, besides the clocks here spoken of, a barometer to determine the density of the air, a hygrometer to measure its humidity, a thermometer for the determination of temperature, a wind-gauge to show the direction of the wind, and a telescope to view the distant station. At each station were also planted a twelve-pounder, and a six-pounder; and tents were provided for the experimenters and their assistants.

In order that the guns at both stations should be fired at the same instant of time, the following preparatory arrangements were made. At 7ʰ 55′ P. M. by the chronometer of Zevenboompjes, (one of the stations,) a rocket was fired at that station, which, on being observed at the other station, was immediately answered by a second rocket. This was the signal that on both stations everthing was ready. At 8ʰ 0′ by the chronometer of Zevenboompjes a cannon was fired at that station, whilst the observers at Kooltjesberg noticed with great exactness the time on their chronometer when the flash was seen. This was repeated at 8ʰ 5′, so as to enable the observers to determine exactly the difference of their chronometers, due to difference of longitude. By this determination they were able afterwards to fire their guns at precisely the same instant of time; the object being to have a double series of observation going on when the air was in the same condition as to temperature, &c. The exact correspondence in the firing of the guns was obtained in the following manner. At each station, an officer had the chronometer placed before him on a small table very near the gun; a non-commissioned officer or gentleman-cadet stood ready with the port-fire, near the touch-hole, and at the instant required, the officer holding the chronometer pressed the arm of the person who was to fire the gun, which went off at the very moment. With a little practice they were certain to fire the gun at any given second. For several successive nights the experimenters were deprived of some of the desired results, in consequence of the wind preventing the report of one of the guns from being heard at the other station; but the combined result of repeated observations gave for the velocity of sound, at a temperature of 32° Fahr. 1089$\frac{3}{4}$ English feet per second.

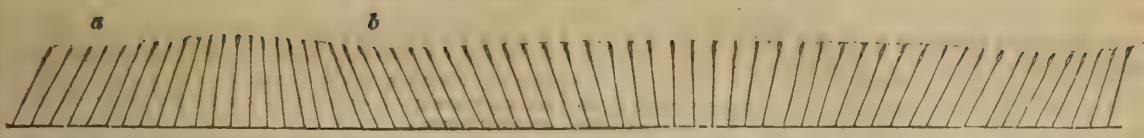
It thus appears that, even at the freezing temperature, the velocity of sound, as determined by experiment, is 144 feet per second greater than that deduced theoretically by Newton; and as Laplace showed that the addition of heat would make such an augmentation in the elasticity of the air as to augment the velocity of sound $1\frac{1}{10}$ feet for every increase of temperature amounting to one degree, it gives 1125 feet as the velocity at 62°, a temperature selected for many scientific purposes.

The presence of aqueous particles in the air has a tendency to increase the velocity of sound, as an impulse is communicated more rapidly in a watery than in an aërial medium. It has been found that in the moist sultry plains of Cayenne the velocity was 1175 feet per second, the augmentation being due conjointly to the greater heat and greater moisture of the climate. On the other hand, some experiments made on the dry and elevated plains of Quito gave a lower velocity of vibration than that obtained in Europe.

As the velocity with which sound is propagated through any medium depends upon the specific gravity and the elasticity of that medium, it follows that the velocity differs in different substances. It is found that the elasticity compared with the density, is greater in a large number of solids, in all liquids, and in hydrogen gas, than in air; and a sonorous impulse is communicated through them more rapidly than through air. Thus, Mr. Canton estimated the elasticity of water at about 22,000 times that of air, while its density is only 800 times as great; and this gives a velocity of sound equal to 4900 feet per second; nearly five times as great as in air. From some experiments made on the comparative densities and elasticities of pure water, sea-water, tin, silver, brass, copper, iron, and wood, it has been deduced that if the velocity of sound in air be called 1, then the velocities in the other substances will be nearly as follows:—pure water 4$\frac{1}{4}$, sea-water 4·7, tin 7·5, silver 9·0, brass 10·5, copper 12, iron 17·0, wood from 11 to 17.

That sound travels with different velocity through different media has been abundantly ascertained. In some experiments performed by Biot on the water-pipes of Paris, when a sound was communicated at one end of a long tube filled with air, two sounds were heard at the other end, one having travelled through the mass of metal forming the tube, and the other through the contained air; the former having travelled more rapidly than the latter. If a blow be struck at one end of a brick wall, and a person apply his ear close to the wall at the other end, he will hear a duplication of the blow, first through the substance of the wall, and then through the surrounding air. It has been observed that when an earthquake has occurred near the sea-shore, the waves on the surface of the ocean, caused by the disruption, have been observed at a distant station in less than one-fourth of the time that a sound (such as a volcanic eruption) would have taken to travel that distance through the air. Sound travels through ice with about the same velocity as through water; and it is usual among the savage hordes who inhabit the sterile steppes of Tartary, where the intervention of lakes and the frequently frozen state of the ground give an icy character to the region, to place the ear to the ground on the expected approach of an enemy; thereby enabling them to hear more quickly, and to estimate more correctly the distance and the direction of any sound that might be sensible.

It is desirable now to offer a brief explanation respecting the state of the particles of air during the propagation of sound. When we say that sound travels 1125 feet in a second, it is not to be understood that any of the particles actually move to that distance; their individual movement is confined within extremely narrow limits, but the *effect* of this movement is propagated from particle to particle with the rapidity here indicated. As soon as the particles first disturbed have moved to such a distance as their elasticity will allow them, they return to their former position, and acquire in so doing a momentum sufficient to carry them to a short distance in the opposite direction; and thus they acquire an oscillatory or vibrating movement. Each particle receives its disturbing force later than the one preceding it; and thus the particles are in different stages of movement, some moving onwards, while others are moving backwards, the two sets being separated by particles occupying their original positions. This has given rise to the term, *wave* of



sound, a wave being understood to include particles in all the various stages of vibration, each wave being exactly similar to all the others. If we know the number of times that each particle vibrates to and fro in a second, we can ascertain the length of the wave of sound; for by dividing 1125 feet by the former we obtain the latter. The successive waves of sound have been beautifully illustrated by the analogy of a waving field of corn. Supposing the stems of corn to be vertically situated and to be equidistant, if a blast of wind were to blow over the corn-field, it would first influence those stalks nearest to the point from whence the wind comes, and they would be bent in the contrary direction. But by the time the impulse had been communicated to other stalks a few feet distant, those first disturbed would rear their heads again; and not only so, but they would acquire a momentum which would carry them to the other side of the vertical line. The resulting effect may be illustrated by the annexed cut, in which the points from *a* to *b* represent the ears of corn congregated more closely than in their quiescent position, while at other points they would be separated more widely asunder. If we suppose the elasticity of the stalks to be equable and uniform throughout, the distance from *a* to *b*, or a wave of undulation, would depend on the length of the stalk, and not on the violence of the wind; the principal circumstance which determines it being the rapidity with which the stalk would return to its quiescent position after disturbance.

When speaking of the distance to which a sonorous impulse is propagated in a second of time, we confined our remarks to a row of particles situated in a straight line; but in practice this limitation cannot be maintained. Any impulse which tends to urge one particle of an elastic fluid in a certain direction, cannot do so without exerting a lateral pressure on the surrounding particles; for the equalising tendency of elasticity renders impossible the forward motion of particles without at the same time disturbing the equilibrium of those situated laterally.

We shall attain greater accuracy if we suppose sound to be propagated spherically round the vibrating body. When an explosion takes place, the waves form a series of concentric hemispheres, since the surface of the earth may be considered as bisecting the spheres into which the waves would otherwise be formed; and in the absence of wind, we have every reason to believe that the sound is equally loud and travels equally far in every direction. But if we vibrate a string or a flat surface, we have no reason to expect the sound to be equally loud in every direction. If, for instance, a tuning-fork be vibrated, and held so that the plane of vibration shall pass through the ear, the percussion on the tympanum, or the loudness of the sound, (which are analogous expressions,) is greater than when the fork is held at right angles to that position. We may illustrate this by the annexed figure. Let *a b* represent the two prongs or arms of the tuning-fork, with their ends presented towards the eye; and let the concentric segments represent the circles or rather spheres of

undulæ which are in constant process of generation from the central point. The employment of segments of circles indicates that the velocity is the same in every direction; but the *thickening* of the segments from *a* to *c* and from *b* to *d* may be taken to indicate the greater loudness or intensity of the impulse at those points from *a b* to *e*, or from *a b* to *f*, on account of the vibrations of the parallel bars being performed in the direction *a b* to *c*, and *a b* to *d*. If the plane of vibration of a string were constant in its position, it is probable that we should find a different intensity of the sound elicited from it, according to the position in which the ear were placed with respect to that plane; but it is almost impracticable so to regulate the impulse given to the string as to confine its vibrations to one plane.

The circumstance which determines the distance to which sound can be propagated, is the intensity of the first impulse; and whatever that intensity may be, the effect upon the ear decreases as the square of the distance increases. But this rule remains permanent only when the sound is capable of a spherical propagation. If it be interrupted by any solid obstacle, those waves which would otherwise proceed in a straight line from the sounding body, are diverted from their original direction: they are reflected or carried along the surface of the obstacle, and extend to a considerable distance with very little loss of intensity.

A series of valuable and curious experiments on the effect of tubes in aiding the audibility of sound at a great distance were performed by M. Biot some years ago. He availed himself of the opportunity afforded by a combination of cast-iron pipes which had been newly laid down for the purpose of supplying the city of Paris with water. These pipes formed a continuous canal of equal internal diameter throughout, and had two flexures about the middle of its length. M. Biot, after stating that the pipes extended to a distance of 951 metres (about 3120 English feet), proceeds thus:—"Sounds uttered in the lowest tone of voice were heard at this distance, so as not only to enable me to distinguish the words, but to keep up a lengthened conversation. I wished to determine the lowest tone at which the voice ceased to be heard, but I was unable to do so: words spoken as low as when we whisper in another's ear were heard and appreciated; so that in order *not* to be heard there was positively but one means, which was not to speak at all. Between the asking and the answering of a question in this manner there elapsed $5\frac{88}{100}$ seconds; this then was the space of time that the sonorous impulse occupied in travelling twice the length of the column of air, that is, $951 \times 2 = 1902$ metres (6240 feet, about a mile and a quarter). In order to ascertain whether grave and acute sounds, or strong and weak sounds, were propagated with equal rapidity, or if there were under such circumstances any difference between them, I caused some airs to be played upon a flute at one of the extreme ends of the pipes. It is known that a musical piece is generally subject to a certain 'measure' which regulates very exactly the interval between the succeeding sounds. Consequently if some of the notes were propagated either more rapidly or more slowly than others, they would have arrived at my ear in a confused manner, the various tones mingling with those which preceded or followed them in the order of the tune, which, thus heard, would have been entirely changed in character. But instead of that, it was perfectly regulated in strict conformity with its natural time. Whence it results that all sounds are propagated with equal velocity." Biot states that in order to perform this experiment successfully, he found it necessary to choose the calmest period of the night, to avoid the interruption which the busy hum of day would have occasioned. He also fired a pistol at one end of the tube, and says that the report "occasioned a considerable explosion at the other end, when the shock arrived there. The air was driven from the last pipe, with sufficient force to produce upon the hand, the sensation of an impetuous wind, to hurl light bodies placed in its path, to a distance of more than half a metre, and to extinguish lighted tapers, although we were at the distance of 951 metres from the spot at which the pistol had been fired two seconds and a half before."

2. Musical Sounds.

The difference between a *noise* and a *musical sound*, and the diversities of the latter, are the points to which we next direct our attention.

A *noise* is the impression produced on the ear when the vibrations of the sounding body are irregular, whereas a musical sound owes its beauty to the regular and equal-timed vibrations of the body which yields it. If a body be struck and it produces a dull or a grating sound, we may generally conclude that it possesses little elasticity, or at least that it is not fitted for the performance of vibrations. Such is the case with a beam of wood, a clod of earth, a mass of stone, &c. But when, either from the nature of

the substance itself, or from the form into which it is worked, a body is capable of vibrating regularly, then the emitted sounds partake of that character which we are accustomed to call "musical."

Moreover it is found that when two bodies vibrate regularly, but one more rapidly than the other, the former yields a higher tone than the latter. An experiment made by Savart, a learned Parisian philosopher recently lost to science, will enable us to illustrate these points. He caused a metallic wheel to be made with 360 equidistant teeth cut in its edge; and held a piece of card in such a position as to be struck by every tooth in succession as the wheel revolved. Now the slip of card, not being of elastic material, was not calculated to vibrate either continuously or equably after percussion, and therefore a musical sound could not result from any one single blow. But if the wheel revolved so fast as to cause a large number of blows per second to be given to the card, then a musical sound was heard, not due to the vibrations of the card itself, but to those of the air moved by it at each blow. When the wheel was turned so that six or eight teeth struck the card in a second of time, nothing but a succession of slight blows was heard; but when the rapidity increased to sixteen, a low humming sound was distinguishable: the individual sounds lost their separate identity (so far as the sense of hearing was concerned), and became blended in a continual hum or low musical note. When the velocity of rotation was increased and the rapidity of contact between the teeth and the card thereby augmented, the sound, still continuing musical, was heightened in pitch, becoming more and more acute as the rapidity increased. Savart was thus enabled to attain a rapidity of 4000 strokes of the card in a second; and by a different form of apparatus he reached so high a number of 24,000 vibrations, which yielded a note of extraordinary acuteness.

If we inquire why the noise produced by the avocation of the itinerant knife-grinder is an unmusical one, it will not be difficult to show that it must result from that inequality of vibration before alluded to. The small elevations which cause the roughness of his grindstone are situated at irregular distances one from another; and the sounds resulting from the friction between those elevations and the blade of steel which he applies to the wheel, do not follow each other at exactly equal intervals. It is probable that if his wheel were cut across its edge with regular groves like a file, the sound would be somewhat musical, so long as the grooves retained their figure. We may similarly account for the grating, unpleasant noise of a saw, by considering the very unequal rapidity with which the arm moves. This unequal motion gives an irregularity to the rapidity of the concussions between the teeth of the saw and the object against which they strike.

We thus see that equability in repetition is the agent to which we are to look as the regulator of musical sounds, and we choose the materials of our musical instruments with especial reference to their vibrating quality. A glass goblet and a porcelain vessel of the same shape yield sounds different in musical character, not because one is harder than the other, but because one is more elastic and performs its vibrations more equably. The cords of stringed instruments are formed either of metallic wires, or of an animal substance which regains its primitive position after disturbance, with great regularity and intensity. Cymbals and bells are formed of a metal whose vibrations are both extensive in range and regular in recurrence. Wind instruments, which depend for their action on the longitudinal vibration of a column of air, derive their musical sounds from the circumstance that air is perfectly elastic, and thus performs all its vibrations in equal times. We thus arrive, by various paths, at the conclusion before stated, that all our musical instruments are merely contrivances by which the circumambient air may be set into equable and rapid vibration.

We have stated that if two musical notes be due to different velocities of vibration, the higher velocity produces the more acute tone. We have now to speak of a third sound resulting from the simultaneous production of the other two. When we put a string into vibration, every time it passes the axis or position of rest it gives one impulse to the surrounding air and to the ear. Suppose this to occur 100 times in a second, and that we take another string whose vibrations amount to 200 in a second; then if we vibrate both together, we cause two separate systems of undulations to be propagated, the one with a rapidity of 200, and the other of 100 in a second. Every second vibration of the former will coincide with one of the latter, and an augmented impulse will be the consequence. This augmentation of intensity, occurring at intervals of $\frac{1}{100}$ of a second, furnishes a new element, as if a *third* note were actually produced, equal in pitch to the lower of the two original notes.

But this will be rendered more clear if one of the strings vibrates 100 and the other 150. In such case we shall find every second vibration of the one coinciding in direction and in ultimate effect with every third vibration of the other; these coincidences would thus occur 50 times in a second, and would thus form a third series, springing from, but independent of, the other two.

It is from this source that many writers on Harmony trace the pleasure which results from musical sounds, that is, from the production of a third sound from two others heard together. We are aware that other theories have been offered in relation to this matter; but without entering on the controversies which the subject has excited, we shall offer such details as will serve to convey a few general notions on the matter.

If the performers on two musical instruments produce two dissimilar tones, or if a performer places his fingers on two keys of the pianoforte at the same time, and the un sound be pleasant to the ear, we shall always find that the rapidity of vibration producing those tones has such a ratio, that a third series, resulting from the coinciding intensities of the other two, will have a considerable rapidity of repetition. If the two series are equal in rapidity, the musical effect is what is called *unison*, which is the most perfect agreement of tone. If the velocity be as one to two, the latter is the "octave" to the former, the next approximation to unison. If they are as two to three, the one is (in musical language) a "fifth" to the other. If, on the contrary, we take any more complex ratio, such as eleven to seven, we should find that no musical interval is represented thereby. In what way this bears on the principles of harmony we shall endeavour to explain.

Every one is familiar with the expression "a musical tone" or "semitone," and there are but few individuals so entirely destitute of musical feeling as to be unable to produce a few notes of an air or song with an approximation to correctness. Now it is found that the notes sung or played or hummed by any number of persons, bear, within a comparatively small range, a close analogy to each, as regards the intervals between the notes; and this tacit agreement among both learned and unlearned well deserves our consideration.

In order to give precision to our remarks we will assume that a certain note, called C (*DO*) for instance, is due to 240 vibrations per second. In the standard tuning-forks used at Mr. Hullah's Singing Classes at Exeter Hall, the C or *DO* is taken at 256, 512, &c., vibrations per second; but our assumption is taken merely for the sake of avoiding fractions, and is not to be considered in any other light. If a tone, resulting from 480 vibrations per second, be heard at the same time as our assumed fundamental tone, the agreement is so perfect and satisfactory to the ear, and the new tone bears such a close resemblance to the fundamental tone, that it has been universally agreed to designate it by the same letter of the alphabet. We have then two tones (C and c) depending respectively on 240 and 480 vibrations per second; and the pleasure derivable from them has been attributed to the production of a *third* tone, called the "grave harmonic," resulting from an augmentation of tone repeated 240 times in a second. If we next estimate what ratio between the vibrations will produce a harmonic of the next greatest frequency, we shall find it to be the ratio of 3 to 2. 360 bears to 240 the same ratio as 3 to 2; and if heard with the latter, produces the very agreeable interval of the fifth. This note also, viz., that resulting from 360, if heard at the same time as the upper note 480, to which it bears the ratio of 3 to 4, gives the musical interval, almost as agreeable as the former, called the "fourth." In the same way the ratio of 5 to 4, a very simple one, gives a harmony very pleasing to the ear; and we find accordingly that 300 and 240 will yield this ratio.

We thus obtain four notes, which may be represented thus:—

C	E	G	c
DO	*MI*	*SOL*	*DO*
240	300	360	480

all of which are connected by very simple ratios, viz., C and c=1 to 2, C and G=2 to 3, C and E=4 to 5, E and c=5 to 8, E and G=5 to 6, G and c=3 to 4. These four notes produce

a beautiful effect when sounded together, and then form what, in musical language, is called the "common chord." An attentive ear is conscious of hearing many sounds besides those properly belonging to the four notes; these are the "grave harmonics," resulting from the frequent coincidences of the vibration of different notes, when the ratios between them are simple.

But the vacancies between these four notes are too wide for the purposes of music; and it has been the custom, in almost every country, to insert three others, so as to form a gradually ascending scale of sounds. The manner in which this has been effected is the following:— It will be seen that three of the above notes, C, E, G, have vibrations in the ratio 4, 5, and 6; this relation has been called a "triad," and two other similar triads may be so introduced as to fill up the vacancies in the scale. Let us make c the highest note of such a triad, and G the lowest note of another such; these will give respectively 320, 400, 480, and 360, 450, 540; each pair of which gives numbers in the ratio 4, 5, 6. As every note receives the same name as the note resulting from exactly half the number of vibrations, on account of the similarity of sound, we may take, instead of 540, its half 270; and then we can form our scale thus, taking letters to the notes produced:—

C	D	E	F	G	A	B	c
DO	*RE*	*MI*	*FA*	*SOL*	*LA*	*SI*	*DO*
240	270	300	320	360	400	450	480

This forms the usual "diatonic scale" of music, of which the intervals appear so natural, that if an unpractised person be required to utter an ascending series of tones, he is found, involuntarily and in utter ignorance of the fact himself, to produce a succession of sounds the result of a series of vibrations very nearly in the ratio here given. As far as we are justified in referring this circumstance to its source, it would seem that this natural series produces a system of "grave harmonics," so rich and full as to appeal powerfully to the ear.

It is customary to distinguish between melody and harmony, on the ground that melody is a succession of single sounds, while harmony is a combination of sounds heard at one time. But, however correct this distinction may be, it is worthy of remark that every melody is made up of sounds so chosen with regard to each other, that different combinations of twos, threes, and fours, chosen from among them, produce those beautiful effects which we designate harmony. Melody and harmony, therefore, however different, derive their charm from the same common source, viz., a certain simplicity of numbers among the vibrations producing musical notes.

There is another point of view in which the ratios between the different notes of the musical scale may be considered, which is also convenient as enabling us to speak of the comparative lengths of a string which produce the eight sounds of the octave. It was stated in a former page, that a string, in order to vibrate with twice the velocity of another string, must be one half the length; to vibrate with thrice the velocity, it must be one-third of the length, and so on. It follows from this, that whatever ratio exists between the numbers of vibration producing any two given tones, the comparative lengths of two strings which produce those tones are in the inverse ratio. If we reduce the list of numbers, 240, 270, 300, 320, 360, 400, 450, and 480 to a similar series of which the lowest = 1, then the whole will be 1, $\frac{8}{9}$, $\frac{5}{6}$, $\frac{4}{5}$, $\frac{3}{4}$, $\frac{5}{8}$, $\frac{15}{16}$, 2; and if we invert the divisors and dividends of the fractions we obtain 1, $\frac{8}{9}$, $\frac{5}{6}$, $\frac{4}{5}$, $\frac{3}{4}$, $\frac{3}{5}$, $\frac{8}{15}$, $\frac{1}{2}$. When, therefore, we have a string which yields the note C, due, as we are here supposing, to 240 vibrations per second, if it be shortened to $\frac{8}{9}$ of its full length, it will yield the next note D; if to $\frac{5}{6}$, the note E; and so on.

The whole of the details which have recently engaged our attention, relate to the tones of *one octave* only; but we shall find this quite sufficient for our purpose, as every successive octave is formed precisely in the same way. To ascertain the number of vibrations producing the tones in the next higher octave, we have only to double the numbers attached to the corresponding letter in the lower octave; for the second higher octave we take four times the number, and so on.

We assumed as a convenient number, 240 vibrations per second for the note C; but we also stated that 256 is the number now fixed upon in practice. On this latter point it may be well to offer a few words of explanation. It has been deemed convenient to call the effect produced by one vibration per second (although perfectly inaudible) by the letter C, and to apply the same title to all the duplications of that number, that is, to 2, 4, 8, 16, 32, &c., vibrations per second. It is found that, in following this series, the fifth C is, under ordinary circumstances, about the lowest sound which can be heard, and that the middle C of a pianoforte is the ninth in the series, due to 256 vibrations per second. This was the standard recommended by the late Dr. Thomas Young, and is one possessing many advantages; but in practice there has been great diversity. Experiments made at different times have shown that the middle C of the piano-forte has varied from 238 to 264 vibrations per second, in different orchestras and at different periods. To remove the obvious inconveniences resulting from this state of things, a standard has been recently determined whereby the middle C of the pianoforte shall be produced by 256 vibrations per second,—the number recommended by Dr. Young. The determination was, in the first instance, made with a view to the preparation of tuning-forks for the Singing Classes conducted by Mr. Hullah, at Exeter Hall, under the sanction of the Committee of Council on Education, the C selected being an octave above that just named, and being adjusted by scientific means to 512 vibrations per second; but the standard, once attained, is calculated for general use, both in instrumental and in vocal music.

The highest note used in music is about the 14th C (five octaves above the middle C of the piano-forte), due to about 8000 vibrations per second; but much higher tones can still be heard, although their very acuteness deprives them of all value for the purposes of music.

The earlier details of this section have given a sufficient idea of the nature of the "grave harmonic," and of the probable mode in which this harmonic heightens the effect of musical combinations. But the term harmonic has likewise been applied to tones produced under very different circumstances; tones which, from being always *higher* than the fundamental tones whereon their production depends, are called "acute harmonics."

If we draw a bow across the string of a violoncello about midway between its two extremities, we draw the central part farther from the position of repose than any other part; the consequence of which is that the whole string continues to vibrate backwards and forwards over the line of repose. But if the bow be applied gently near one end of the string, four tones can frequently be heard at once, three of which are called "acute harmonics." The origin of this singular effect seems to be, that while the whole string vibrates in one system to produce the fundamental or proper note of the string, it is at the same time broken up into three subordinate systems, composed of aliquot parts of the string. Sometimes these lengths are $\frac{1}{2}$, $\frac{1}{3}$, and $\frac{1}{4}$ of the whole length, and in such case the tones resulting from them are the octave, the twelfth or octave to the fifth, and the double octave.

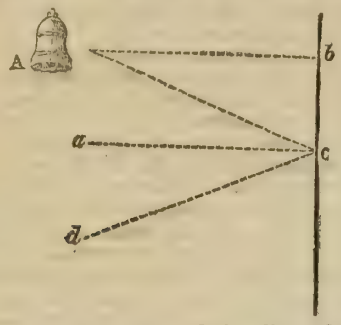
Much obscurity exists as to these subdivisions of a string. A writer in the *Encyclopædia Britannica* attributes their formation to the reaction of the fixed termini of the string; that is, that the string by its vibration communicates a vibratory impulse to the solids to which the two ends are attached, and that those vibrations are reflected, as it were, from the solid supports back to the string, and by interfering with the continuity of the previous vibrations existing therein, generate a new series of a different rapidity from the former. These harmonics can be artificially produced by placing the finger very lightly on any of the aliquot divisions of the string, and drawing the bow across near one end of it; in this case the two divisions of the string will vibrate in different systems, and will produce tones dependent on their relative lengths.

3. The Reflexion of Sound.

When an obstacle opposes the motion of an elastic body in any given direction, a rebound or reflex motion occurs, whether the moving body be a solid ball, waves of water, of light, or of sound. All of these present very similar features, in respect of the direction in which the impulse is communicated; but it will be sufficient to confine our attention here to the phenomena presented by sound.

Let us take, as a simple illustration, the case of a bell sounding at a short distance from a wall. Let *b c* be the wall, and A the bell, from which pulses of sound proceed in all directions, of which we will here take notice only of the two A *b* and A *c*. The pulse which proceeds perpendicular to the wall, A *b*, is reflected back along the same line; but the pulse A *c* is reflected, not along the same path, not perpendicularly to the wall, but in a direction *c d*, which is as

much below the line *a c* perpendicular to the wall, as A *c* is above it. This is expressed by saying that the "angle of reflexion is equal to the angle of incidence," a law which, by its applicability in optical phenomena, is productive of important consequences; were not this "equality of the angles" true, our mirrors would give distorted and irregular images of reflected objects; the reflecting telescope, the concave reflector of a microscope, the parabolic reflector of a lighthouse, all would produce irregular results; but the law is uniform and constant, both in sound and light.



When we consider that a circle is a line, of which every point is equidistant from the centre, we can easily comprehend that when an impulse, such as that of sound, is received from the centre, the reaction or rebound from the circumference follows precisely the same path as the original impulse, but of course in the opposite direction. Every part of the circle is perpendicular to the centre; and as the angle of reflection is equal to the angle of approach, when that angle is 90° or perpendicular, the reflection is likewise 90° or perpendicular, and the two paths coincide. Now if we pass from the consideration of a single impulse, to that of an impulse generating from the centre and extending in every direction, we shall easily see that the reflexions would all congregate at the centre of the circle, and a sound of extraordinary loudness would be heard by any ear placed at that point.

The effect of a circular obstacle being understood, it will not be difficult to apply the same principle to instances wherein the reflecting barrier is formed into any other geometric figure. For example:—One of the properties of the *ellipse* is, that there are two points or foci, more or less near the centre of the figure according to the proportions between its length and breadth, such, that two lines drawn from those foci to any given point in the curve shall form equal angles with the curve at that point. From this it follows, that if a sonorous impulse emanate from one focus of an ellipse,—say a brick wall formed into an elliptical shape —the reflected waves will all congregate at the other focus. If the ellipse we have employed were the wall of a racket or fives-court, and a player were situated at one focus, in whichever direction he struck or threw his ball, it would after reflexion, fall near the other focus. If it represented the raised border of a billiard-table, a ball propelled from one focus would rebound in the direction of the other. If it represent a series of mirrors arranged in an elliptical form, and a candle were placed in one focus, an eye at the other focus would receive rays of light from every part of the curved boundary of glass. These are exemplifications of the maintenance, in many different aspects, of the two laws relating to reflexion and the properties of the ellipse.

We will here give two instances to illustrate the effect of uttering audible sounds in the focus of an ellipse. There are on each side of Westminster Bridge several arched recesses (intended as resting-places), and placed exactly opposite to each other in pairs. If in the stilly calmness of night two persons place themselves in opposite recesses, with their backs towards each other, and one of them whisper, the other will hear distinctly what is said. These two recesses form the two ends of an oval or ellipse; the whisperer is situated at or near one focus, and the listener at or near the other; and the multiplied reflexions produce a sound as loud as if the listener's ear were close to the speaker. The other instance is the following. There is a church in Italy wherein the two ends are elliptically formed, and the confessional (common in Roman Catholic churches) happened to be in one focus of the ellipse. It chanced on one occasion that two persons were present,—one in the confessional, in the one focus, and the other near the other focus,—and the latter heard the recital made by the former. The consequences were such as were unpleasant to all parties, and the confessional was thereafter removed to a different part of the church.

If the preceding details be clearly understood, we shall be prepared to expect that an irregularly-formed surface would reflect sound irregularly, and without any tendency to focalization; and this brings us at once to the cause of the great varieties of *echoes*.

The poetic fervour of the ancient Greeks, and particularly their fondness for personifying the feelings, the passions, and even the perceptions, were excited by the mysterious and captivating nature of echo. The laws which regulate sound were not sufficiently understood to enable the philosophers of those times to assign the true origin of echo. They therefore depicted it as "a lovely nymph, doomed to wander in wild and lonely places, and to *repeat* the language of others." When however advancing science broke the poetic charm which the warm imaginations of the ancients had thrown around this as well as many other natural phenomena, it was then clearly ascertained that echo is merely the result of reflexion of sound, chiefly, but not always, from solid obstacles.

If a person were standing on a rocky eminence, and a surface of wall were immediately opposite to him, a sound, when uttered by him, would, after reflexion from the opposite surface be remitted to the spot whereon he stood; and the time which would elapse between the utterance and the reception of the echo would depend altogether on the distance between the two stations. If, as before shown, sound travels at about 1125 feet per second, and if the distance between the stations be half a mile, the interval of time between the sound and its echo would be about 4⅔ seconds. As a converse problem we may suppose that the elapsed time is 3¼ seconds, and may ask how far asunder are the stations. Easy calculation shows this to be about 2110 feet. If the two stations be so situated that a second wall or smooth rock is immediately behind the speaker, and exactly opposite to the first, there will be a repetition of echoes, the sound reciprocating backwards and forwards.

These multiple echoes lead us to a remarkable and instructive inquiry, viz., the gradual production of a musical tone as the distance between the stations decreases. If the two stations were 562 feet apart, the speaker would hear his voice echoed once every second until the sound finally died away; if the distance were 140 feet he would hear four echoes per second; and if 35 feet, the echoes would occur sixteen times in a second. Now it will be recollected that, when treating of musical sounds, we stated that a sound *of any kind*, repeated regularly and equally 16 times in a second, constitutes a nominal note, nearly the lowest which the ear is capable of appreciating. In the instance of echoes, therefore, when they occur less frequently than 16 in a second, the ear can detect and appreciate them singly; but when they are more frequent, their separate identity becomes lost, and the whole blend into a deep musical tone. When the distance between the stations is reduced to about 13 feet, the echoes occur with a rapidity of 43 in a second. Now a sound repeated 43 times in a second produces a tone equivalent to the lowest F of the piano-forte, and the person who utters the sound would find that he was accompanied, not by a succession of echoes, but by a low musical note.

These considerations enable us to explain a circumstance not always well understood, viz., the tone or sound heard in an empty room. If a room be well and squarely built, the sides unbroken by recesses or projections, and destitute of furniture, a constant and unvarying *tone* will follow any sound produced therein, and that tone, in regard to pitch, will depend on the size of the room. It is also presumed that the speaker is in the middle of the room, midway between either two opposite walls. Let us suppose the room to be 16 feet long. A sound uttered by a voice in the centre of the room would travel 8 feet, to reach one wall, from which being reflected it would again travel 8 feet, and then reach the ear. The impulse, meanwhile, would have produced a similar effect in the opposite direction, and both echoes would reach the ear at the same time, after having travelled 16 feet. But this would not stop the progress of the impulses; they would be reflected from side to side, until the force was gradually expended. As each pulse of sound would impinge regularly on the ear, after having travelled 16 feet, it follows that the ear would be excited by the sonorous vibrations existing in the air 70 times per second, because 1125 feet (the velocity of sound per second), divided by 16 (the distance travelled by each echo) gives about 70. An impulse repeated 70 times per second gives the note D, two octaves below the middle D of the piano-forte, and we

should be justified in saying that the *tone* of that room is the note in question. In the same manner we may ascertain the tone belonging to any room, by taking the velocity of sound at 1125, the number of vibrations producing the middle C of the piano-forte at 256, and combining these results with the dimensions of the room.

When we produce a sound of moderate loudness in a vaulted passage, the concavity of the ceiling concentrates a large number of reflexions at the centre of the passage, and the great rapidity of the echoes from side to side produces a musical tone having considerable elevation of pitch. These two circumstances combined, produce extensive and remarkable modifications in the original tone. It is with difficulty that two persons can understand each other when speaking in such a passage, because the accumulated echoes and the resulting musical tone, mingle with the next following words. This circumstance renders it desirable to make a distinction between the interior fittings of a room intended for oratory, and those of one intended for music. In the case of music a slight echo is far from disagreeable, because it augments and enriches the sound, especially in slow movements, where there is time for the echo to perform its part before the next note is played. In a room intended for oratory or conversation, however, echo is decidedly bad. The object of the speaker is to be well understood by his hearers; but if the echo of his first word mingles with the original sound of the second, the former becomes confused and difficult of appreciation: and this inconvenience will increase whenever the speaker increases the rapidity of his utterance. This has been assigned as one reason, among others, why so much of the cathedral service is chanted, or expressed in musical tones; the resulting echo not being so inconveniently felt under such circumstances.

The production of a musical note by the regular recurrence of echoes, is pleasingly shown by striking one end of a row of iron-railings placed equidistant. When we strike the first bar, the air between it and the second will be set into vibration, and will be reflected from the surface of the second bar. Another portion of the impulse will have been travelling onward toward the third bar, from which it will in like manner be reflected. A third instant of time will witness the approach and rebound of a third portion of air at the fourth bar: and so of all the others. Now the resulting effect is curious. Let us suppose the bars to be eleven inches apart and one inch thick; we shall then have one foot as the distance between the corresponding sides of two contiguous bars. When therefore the first bar is struck, the impulse has to travel two feet before it again reaches the first bar, that is, one foot before and one after the reflexion at the second bar: now to do this it occupies $\frac{2}{1125}$ or $\frac{1}{562}$ of a second—1125 being taken as the velocity of sound per second. By the time the first reflection has reached the ear, a second portion of the impulse has reached the third bar, and by the time the second reflexion reaches the first bar, the time elapsed will be $\frac{4}{1125}$ or $\frac{1}{281}$ of a second. The next repetition of the sound will be after it has travelled to the fourth bar and back again, a distance of six feet, occupying $\frac{6}{1125}$ or $\frac{1}{188}$ of a second, and so on throughout the whole series; so that if we had 562 such bars, we should receive an echo from the surface of every one of them exactly in one second of time, or 562 sounds in a second, with equal intervals between them. Now nothing farther than this is required to produce a musical tone, or one depending on equal and frequently repeated intervals. Accordingly we should find that our series of palisades or railings would yield the note D, rather more than an octave above the middle C of the piano-forte.

It is a principle similar to this that we are to explain the *rolling* noise of thunder. The lightning flash, which accompanies thunder, but which seems to us to occur earlier, on account of the great velocity of light, is over in an instant, whereas the rolling of thunder continues for several seconds after the flash has disappeared. This is attributed to the particular positions which the cloud may occupy with respect to the observer. Clouds may be placed at various distances from him, so that the echo of the report resulting from the thunder reaches his ear at different instants, according to the distance of the cloud whence it is reflected. One cloud may be at such a distance that the report may be echoed in five seconds, a second report in six seconds, and so on; and thus may arise those successive sounds which we denominate the "rolling" of thunder.

Our space will not allow us to enter largely into details respecting terrestrial echoes. It must suffice to say that there are many spots, both naturally and artificially contrived, where sound is perfectly reflected as to produce remarkable echoes*. The Lake of Killarney, Woodstock Park, St. Alban's Church, Shipley Church in Sussex, the Cathedral of St. Paul, and Gloucester Cathedral, are some of the localities and buildings in our own land which have acquired celebrity on account of their echoes. It may, however, be well to describe somewhat in detail a celebrated spot on the banks of the Rhine, which yields a remarkable echo, and a view of which we have chosen for our frontispiece. This is the *Lurleyberg*, or Lurley rocks, on the banks of the Rhine between Ehrenbreitstein and Johannisberg, not far from Oberwesel. The river flows between lofty cliffs which wind in a peculiar manner in such a way as to afford multiplied reflexions of sound. Mr. Fearnside, in Tombleson's *Views on the Rhine*, makes the following remarks on the subject:—"The river now making a sharp turn, sweeps with a more expanded and rapid current round the base of the large basaltic rock of Lurley, called Lurleyberg, celebrated for producing one of the most remarkable echoes in Europe. The echo is stated to have lost in the lapse of years the strength of its reflective powers, which may have arisen from masses of rock having at different periods been detached and fallen into the Rhine; much however depends on the state of the atmosphere, for if too dry or too moist, the reverberation will be materially altered. The blast of a bugle, the report of a pistol or gun, or a holloa, are repeated distinctly five times. The best position for the production of the echo is either in the middle of the stream or on a small promontory on the right bank. Barthius mentions the celebrity of the echo in his notes on the Thebaid of Statius; and Marner, in the reign of Frederick the Second, wrote a poem, in commemoration. In earlier days, the real cause of echo being unknown, many whimsical reasons have been assigned for its origin by the ancients. Hence many legendary accounts have been given of the echo of the Lurleyberg."

4. Resonance and Sympathetic Vibration.

When treating of the vibration of a column of air, we stated that the tone or pitch of the sound resulting from such vibration depends altogether on the length of the column, without regard to its diameter. But there is a limit to the applicability of this principle: for it is found that when the diameter becomes nearly equal to the length, the note elicited is rather flatter in pitch than when the diameter is smaller. The term *resonance* has been applied to the tone emitted under such circumstances, to distinguish it from the tone emitted from narrow columns of air; thus we speak of the *tone* of a pipe or tube, and the *resonance* of a box, or cavity, or a mass of air of which the three dimensions approach to an equality.

This being premised, we may state generally that every cavity, whatever be its form, has, when filled with air, a resonant tone belonging to it,—a tone which, other things being equal, is constantly the same. Thus, a large shell being held to the ear, a low musical hum or roar is heard; which is the resonance of some particular tone among the innumerable sources of sound which everywhere surround us. If we take a hollow cavity of any description whatever, and placing the mouth at the orifice, shout or speak loudly, we shall find that the cavity will respond, as it were, to one particular note more than any other, and will reinforce the sound of the voice in an extraordinary degree, when that note is produced.

Resonance is often confounded with echo; but the two phenomena are essentially different. An echo is totally indifferent to all variations of pitch; all sounds travel with equal rapidity, and all have the same tendency to be reflected from opposing surfaces. But resonance depends on the comparative length, breadth, and depth of a cavity. It might perhaps be correct to say that resonance is the result of millions of minute echoes from different parts of the cavity; but we know nothing of them except as a whole, which whole is a tone of constant pitch; whereas what we term an echo, is a simple reflexion from one point.

A cavity of any given dimensions yielding a constant tone when the contained air is excited to vibration, Savart has recommended the adoption of cubical organ-pipes, as being more portable than long tubes, and equally certain in their application; a cubic box, whose side measured four and a half inches being found to emit the same tone as a ten-inch organ-pipe. The resonance of cavities has enabled

* The reader will find two amusing and instructive articles on "The Origin and Nature of Echoes," in *Saturday Magazine*, Vol. XIV. pp. 47, 102.

the same distinguished philosopher to detect the existence of nodal or quiescent lines in a vibrating mass of air. For this purpose he constructed a short but wide cylindrical cavity, closed at one end; and over a similar cylinder he stretched a membrane with such a degree of tension that, like the parchment head of a drum, it had a particular velocity of vibration belonging to it. He then procured as a sounding instrument, a glass goblet or harmonica glass; and the whole were so chosen that the resonance of the two cylinders, and the vibrations of the goblet and the stretched membrane, should all produce the same tone. The empty cylinder was then placed horizontally, the harmonica glass placed immediately before its mouth, and the other cylinder placed vertically; so that the membrane itself was horizontal, and in a line with the axis of the horizontal cylinder. In this position everything conspired to increase the intensity of the sound emitted by the glass. If, for instance, the glass when vibrated by a bow yielding a tone due to 500 vibrations per second, the cylinder or cavity before which it was placed, being fitted to vibrate similarly, greatly reinforced the sound by reacting on the mass of air in a right line with the axis of the cylinder. When that agitated air therefore reached the membrane, which was in the prolongation of the axis, it was set into similar vibration, as was shown by the motion of fine sand strewed on its surface; and those vibrations were again strengthened by the under surface of the membrane forming part of a cavity, whose resonant tone was the same as the tone of the membrane.

With this apparatus, Savart detected the extent of the pulses of sound, between each two of which a nodal or quiescent point was situated. When the exploring membrane was situated at any part of a pulse or wave of sound, the sand on its surface was thrown into vibratory action; but when at a nodal point between two pulses, the sand was quiescent.

With this truly philosophical apparatus, M. Savart detected the extent of the pulses of sound, of which we have spoken, between each two of which a nodal or quiescent point is situated, and which depend for their length, on the velocity of vibration, thus:—$\frac{1125}{\text{Vel. of Vib.}}$ = length of pulse in feet. When the exploring membrane was situated at any part of a pulse, the sand on its surface was thrown into vibrating action, but when at a nodal point between two pulses, the sand was quiescent, and if the ear, on being placed on one side of a node nearer to the glass, estimated the sound as emanating from the glass, it would, if placed at an equal distance on the other side of the same node, refer the production of the sound to precisely the opposite quarter; thus proving as was before shown, that the particles of air, in two adjoining pulses, are moving in opposite directions, at the same moment. These phenomena relate to a line coincident with the axis of the horizontal cylinder; but a series of nodal lines was detected in various parts of the apartment, even through an open window, to a considerable distance.

The whole principle of sounding-boards, on which so much of the effect and beauty of musical instruments depends may be referred to that kind of resonance to which the term "sympathetic vibration" has been applied. The strings of a violin are stretched across a bridge, pressing on a broad thin wooden surface, and the pressure of the bow on the strings, by stretching them out of their longitudinal direction, gives a minute but rapid rocking motion to the bridge, which motion is communicated by the bridge to the body of the violin whereon it rests, and the whole upper surface of the violin vibrates with the string. But this is not all. A sounding-peg, placed nearly under the bridge, communicates those tremors to the lower surface of the violin, and the two surfaces together excite the resonant power of the air, in the cavity inclosed between them. Thus we see that the tone emitted by the string receives augmentation and enrichment from three different sources, —the upper surface of the violin, the lower surface, and the air between the two. Savart has shown that if fine powder be strewed on the surface of a violin, it would be thrown into different forms according to the note produced on the string; thus showing that although the body of the violin vibrates with any tone produced, it does not vibrate as a whole from side to side, or from end to end, but divides into separate vibrating portions, separated by nodal lines, and that the position of those nodal lines varies with the note produced.

A principle of sympathy as relating to sounds is observable in a great variety of phenomena. If a number of drinking-glasses be ranged on a table, and a note be strongly excited on a musical instrument near them, any glass happening to correspond in its vibrations with that note will sound sympathetically with it. Supposing the instrument performed 100 vibrations in a second, the surrounding air would be excited with the same velocity of vibration, and would, in its turn, excite similar vibrations in any third body fitted to that particular velocity of vibration: so also a vibrating body not in unison with other bodies may excite sympathetic sounds in them by separating them into their harmonic divisions. "If two cords, equally stretched, of which one is twice or three times longer than the other, be placed side by side, and if the shorter be sounded, its vibrations will be communicated by the air to the other, which will be thrown into such a state of vibration, that it will be spontaneously divided into segments equal in length to the shorter string. When a tuning-fork receives a blow and is made to rest upon a piano-forte during its vibration, every string which either by its natural length or by its spontaneous subdivisions, is capable of executing corresponding vibrations, responds in a sympathetic note. Some one or other of the notes of an organ are generally in unison with one of the panes, or with the whole sash of a window, which consequently resounds when these notes are sounded. A peal of thunder has frequently the same effect. The sound of very large organ pipes is generally inaudible till the air be set in motion by the undulations of some of the superior accords, and then its sound becomes extremely energetic. Recurring vibrations occasionally influence each other's periods. For example, two adjacent organ-pipes nearly in unison, may force themselves into concord; and two clocks whose rates differed considerably when separate, have been known to beat together when fixed to the same wall, and one clock has forced the pendulum of another into motion, when merely standing on the same stone pavement."—Somerville.

A sympathetic sound may be excited in a very pleasing manner by taking a tube closed at one end, and a tuning-fork of such a pitch as shall agree with the tone belonging to the tube. If a wafer be fixed to one prong of the fork, of such a size as exactly to fit one end of the tube, and if the fork be vibrated and held with the wafer immediately over the tube, the tone will be reinforced with great richness, because the column of air in the tube is just the length to vibrate with the fork. If the tube and the fork be not tuned in unison, the sound will be reinforced, but not in so great a degree; in this instance the column of air in the tube is forced into a velocity of vibration different from that which properly belongs to it.

Professor Wheatstone has availed himself of the principle of sympathetic vibration to produce a musical performance of a very remarkable kind. Some years ago this gentleman transferred the whole of the musical effects produced by an orchestra to a piano-forte placed at a considerable distance. A sounding-board (which is merely a large surface capable of vibrating perpendicularly to its own plane) was placed near the orchestra in such a position as to resound to all the instruments. A metallic rod was made to touch the sounding-board, and, at the other end, was brought into contact with the sounding-board of a piano-forte. Professor Wheatstone observes, "The effect of this experiment is very pleasing; the sounds indeed, have so little intensity as scarcely to be heard at a distance from the reciprocating instrument; but in placing the ear close to it, a diminutive band is heard, in which all the instruments preserve their distinctive qualities; and the pianos and fortes, the crescendos and diminuendos, their relative contrasts. Compared with an ordinary band heard at a distance through the air, the effect is as a landscape seen in miniature beauty through a concave lens, compared with the same scene viewed by ordinary vision through a murky atmosphere. It is instructive to mark the steps whereby this is brought about. The instruments in the orchestra excited vibrations in the air, these were communicated to the sounding-board, from that through the metallic rod, then to the sounding-board of the piano-forte, then again to the stratum of air between the latter and the strings, and lastly to the strings themselves.

END OF THE TWENTIETH VOLUME.

LONDON Published by JOHN W. PARKER, West Strand, and sold by all Booksellers.

BOUND BY
HM

UNIVERSITY OF ILLINOIS-URBANA
3 0112 042427614